

# Loudoun County Strategy for Watershed Management Solutions Inventory of Watershed Activities

June 26, 2006

Prepared by the Institute for Environmental Negotiation,  
University of Virginia

## Overview

This inventory of watershed activities was compiled for the Strategy for Watershed Management Solutions (SWMS) process conducted for Loudoun County between January and June 2006. Its purpose was to begin an inventory of all current and future anticipated watershed-related activities in Loudoun County by local organizations, citizen groups, state and federal agencies, and county and regional government. Primary sources for this information were SWMS participants, with collection beginning during a series of 17 stakeholder interviews conducted by the Institute for Environmental Negotiation (IEN). Additional information was obtained from website research, proposal and report studies, emails, and discussions with numerous participants throughout the SWMS process.

## Classification and Metadata

The 78 activities identified below vary greatly in scope, size, and in many cases they are overlapping and are implemented by multiple parties. Building a definitive and clear classification for them is thus difficult. The following four general classifications of activity types were proposed and found acceptable to the SWMS team participants. The four generalized categories of this inventory are as follows.

1. Data, study or resource
2. Education, outreach or project
3. Land use planning, policy or program
4. Stream monitoring or stewardship

A hyperlinked (clickable) Table of Contents listing all activities is provided below for ease of navigation. Activities are grouped first by activity type, then sorted alphabetically by lead organization. Attempts were made to collect a standard set of information for each of the 78 activities identified as of June 26, 2006. If information was not obtainable a field was left blank. A brief description of the metadata collected for each activity follows.

**Activity Type:** Activities are grouped into one of the four activity types listed above.

**Lead Organization:** A lead organization is identified for each activity, understanding that more than one organization is often involved.

**Description:** The written description includes information obtained from websites and proposals, or submitted in writing by SWMS participants. The level of descriptive detail varies.

**Partners/others:** Many activities involve more than one organization or agency. They are listed in this category.

**Timeframe:** If possible, a timeframe is given for an activity. There is great variation in timeframe between activities. Some are one time, period-specific grants while others are full time, on-going programs or projects of government departments or agencies.

**Cost:** Similar to timeframe, costs for each activity varied greatly. Where information was provided, estimated, or made available, it is listed. In some cases volunteer person-hours were given.

**Contact:** To allow further research to be done on specific activities, a primary contact was identified and a telephone and or email address provided. If it was available, an organization's full mailing address and telephone number are listed in a directory in Appendix E (p.42).

**Website:** If a specific website was available for an activity it may be found here. Otherwise the lead organization's homepage was provided as a fallback measure.

**Metric/Result:** This inventory also attempted to provide an analysis of watershed activities. The lead SWMS participants were each asked to attempt to quantify some metric or result for each activity. For example, if specific pollution reduction achievements of an activity were possible to document, such as acreage of wetlands under conservation easement, they were given. Metrics or quantifiable measurements for each activity are neither necessarily available nor feasible to assemble in the timeframe given for this first attempt at an inventory of activities.

This project is intended to be a first step towards helping inform the participants who are committed to the next phases of watershed planning and implementation in Loudoun County. This inventory was compiled by IEN for Loudoun County's Department of Building and Development (LCB&D). All the data below was exported from an excel file called: 'INVENTORY\_2006Jun24\_FINAL.xls'.

Questions, comments, corrections or any concerns regarding this report should be sent to: **Wm. Kelly Baty**, Loudoun County Building & Development, PO Box 7000, 1 Harrison St. 3rd Floor, Leesburg, VA, 20177; Phone: 703-771-5390 Direct, H. 304 725-3748; C. 571 265-2607; Fax: 703-771-5215, Email: [WBATY@loudoun.gov](mailto:WBATY@loudoun.gov)

# Table of Contents

<b>1. Data, Study, or Resource .....</b>	<b>5</b>
1.01 A Citizen's Guide to Erosion and Sediment Control in Loudoun County.....	5
1.02 Data management .....	5
1.03 Groundwater level and quality monitoring .....	5
1.04 Loudoun County Water Resource Monitoring Program (also see 4.11) .....	6
1.05 Stream assessments .....	6
1.06 Wetlands Mapping and Inventory.....	6
1.07 Catoctin Creek TMDL Implementation Plan - Homeowner Component.....	7
1.08 Chemical Characteristics and Groundwater Level Data.....	7
1.09 Loudoun Soil and Water Conservation District Agricultural BMPs .....	7
1.10 Catoctin Creek TMDL Implementation Plan - Agricultural Component .....	7
1.11 Loudoun Wildlife Conservancy (LWC) Benthic Stream Monitoring -- Administrative Activities.....	8
1.12 Loudoun Watershed Watch (LWW) Bacteriological Stream Monitoring -- Administrative Activities .....	8
1.13 Loudoun Watershed Watch (LWW) State and Regional Program Coordination.....	9
1.14 Precipitation monitoring .....	9
1.15 Goose Creek Vulnerability Analysis .....	9
1.16 Protecting Human Health project—Phase 1 (currently in preparation) .....	10
1.17 Groundwater level monitoring. ....	10
1.18 Stream stage (water level) & discharge (flow) continuous monitoring. ....	10
1.19 Bacteria TMDL Study - Goose Creek Watershed .....	11
1.20 Bacteria TMDL Study - Limestone Branch Watershed.....	11
1.21 Bacteria TMDL Study - Piney Run Watershed.....	11
1.22 Benthic TMDL Study - Goose Creek and Little River Watershed.....	11
1.23 Bacteria TMDL Study - Catoctin Creek Watershed .....	11
1.24 Forest Resources .....	12
1.25 Loudoun County Basemapping .....	12
1.26 Fairfax Water .....	13
<b>2. Education, Outreach, or Project.....</b>	<b>14</b>
2.01 Goose Creek Association Educational Workshops .....	14
2.02 Community Educational Programs .....	14
2.03 LCSA Water Forum .....	15
2.04 Loudoun County Environmental Indicators Project (LEIP) .....	15
2.05 Storm drain marking.....	15
2.06 Watershed Education Program .....	15
2.07 LWW Community Outreach and Educational Activities - Family Stream Day .....	16
2.08 LWW Community Outreach and Educational Activities - Website .....	16
2.09 LWW Educational Materials .....	16
2.10 Loudoun Central Reserve.....	17
2.11 PEC BMPs and Land Conservation General Efforts .....	17
2.12 PEC Reducing Nutrient Pollution project.....	18
2.13 Educational Programs .....	18
2.14 Fairfax Water .....	18
<b>3. Land use planning, Policy, or Program .....</b>	<b>20</b>
3.01 EPA Tributary Strategies.....	20
3.02 Fairfax County Watershed Management Plan for Cub Run/Bull Run .....	21
3.03 Preserving Scenic Buffers on Goose Creek .....	21
3.04 Water Resources Technical Advisory Committee (WRTAC) .....	21
3.05 Forest Resources .....	22
3.06 Future Environmental Initiatives.....	22
3.07 Loudoun County Erosion and Sediment Control Program.....	22
3.08 Soil Survey .....	23
3.09 Strategy for Watershed Management Solutions .....	23
3.10 Watershed Management Planning .....	24
3.11 Loudoun County Environmental Initiatives .....	24
3.12 Loudoun County Stormwater Management Program.....	25
3.13 Linear Stream Valley Parks/Trail.....	25
3.14 Goose Creek Sourcewater Protection Plan .....	26
3.15 Occoquan Basin Nonpoint Pollution Management Program .....	26
3.16 Potomac Watershed Roundtable .....	26

3.17	The Virginia Conservation Lands Needs Assessment.....	27
3.18	Forestry Best Management Practices and Water Quality Laws.....	27
<b>4.</b>	<b>Stream Monitoring or Stewardship.....</b>	<b>28</b>
4.01	Audubon Naturalist Society.....	28
4.02	LSWCD TMDL (Total Maximum Daily Load) Stream Monitoring Program.....	28
4.03	Loudoun Wildlife Conservancy.....	28
4.04	Sugarland Run Phase I. Rapid Stream Assessment Technique (RSAT) (~3mi).....	29
4.05	Sugarland Run Phase II. RSAT (11mi).....	29
4.06	Talbot Farm Tributary Rapid Stream Assessment Technique (RSAT) (1mi).....	29
4.07	Loudoun County Baseline Biological Monitoring Survey, Phase II: (~ 8mi).....	30
4.08	Virginia Department of Environmental Quality.....	30
4.09	Youth and Educator Stewardship and Stream Monitoring Programs.....	31
4.10	Citizen Stream Monitoring - Goose Creek.....	31
4.11	Loudoun County Water Resource Monitoring Program (see also 1.04).....	32
4.12	Broad Run Water Quality Monitoring Program.....	32
4.13	Loudoun County Sanitation Authority.....	32
4.14	Loudoun Watershed Watch (LWW).....	32
4.15	Loudoun Watershed Watch (LWW) -- TMDL Related Catoclin Watershed Project.....	33
4.16	Loudoun Watershed Watch (LWW) Bacteriological Stream Monitoring Activities.....	33
4.17	Rapid Stream Assessment Technique (RSAT) Level III (~7mi).....	34
4.18	Metropolitan Washington Council of Governments.....	35
4.19	US Geological Survey.....	35
4.20	Potomac River Basin Drinking Water Source Protection Partnership.....	35
<b>Appendix A: Tributary Strategies Input Table for Loudoun County-BMP .....</b>		<b>36</b>
<b>Appendix B: Tributary Strategies Input Table for Loudoun County-Stormwater...</b>		<b>38</b>
<b>Appendix C: Acronym Table: Organizations.....</b>		<b>39</b>
<b>Appendix D: Index of Organizations by Activity Type.....</b>		<b>41</b>
<b>Appendix E: Organizational Directory.....</b>		<b>42</b>

## 1. Data, Study, or Resource

### 1.01

#### A Citizen's Guide to Erosion and Sediment Control in Loudoun County

*Activity Type:* Data, study or resource  
*Lead Organization:* Loudoun County Building & Development  
*Description:* A brochure prepared by the Department of Building and Development.  
*Partners/others:*  
*Timeframe:*  
*Cost:*  
*Contact:* Steve kayser, Loudoun County Department of Building and Development, 703-777-0397  
*Website:* [www.loudoun.gov/b&d/erosion.htm](http://www.loudoun.gov/b&d/erosion.htm)  
*Metric/Result:*

---

### 1.02

#### Data management

*Activity Type:* Data, study or resource  
*Lead Organization:* Loudoun County Building & Development  
*Description:* Component of WRMP (see also 1.04 and 4.11): Data incorporated into relational database and geographic locations in County GIS. Initial records (presently ~30,000) mainly wells/groundwater and sewage disposal systems data. To be expanded to incorporate other WRMP data.  
*Partners/others:* LCHD, USEPA  
*Timeframe:* 1988 - present  
*Cost:*  
*Contact:* Glen Rubis , Dennis Cumbie, Loudoun County Department of Building and Development, 703-777-0397  
*Website:* <http://www.loudoun.gov/b&d/water.htm>  
*Metric/Result:* All of the WRMP activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

### 1.03

#### Groundwater level and quality monitoring

*Activity Type:* Data, study or resource  
*Lead Organization:* Loudoun County Building & Development  
*Description:* Component of WRMP (see also 1.04 and 4.11): As part of the WRMP (see X.XX), a network of dedicated monitoring wells is being established to track groundwater levels and quality county-wide. In addition to constraining new wells, donations of unused existing wells have been requested and accepted (see well donation program web page).  
*Partners/others:* USEPA  
*Timeframe:* 2003 - present  
*Cost:*  
*Contact:* Dennis Cumbie, Loudoun County Department of Building and Development, 703-777-0397  
*Website:* <http://www.loudoun.gov/b&d/water.htm#water>  
<http://www.loudoun.gov/b&d/well/index.htm>  
*Metric/Result:* All of the WRMP activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

#### **1.04 Loudoun County Water Resource Monitoring Program (also see 4.11)**

*Activity Type:* Data, study or resource  
*Lead Organization:* Loudoun County Building & Development  
*Description:* A long-term program to monitor, collect, and organize basic hydrologic data so that the County and other organizations are able to better understand the quantity and quality of the water resources in the county and to track potential changes to them over time. This will be accomplished by collaboration with various county departments, federal agencies, and local citizens groups. Part of the infrastructure and initial data collection will be funded by a grant from EPA. Some of the major components of the program are described in more detail below.

*Partners/others:* USEPA  
*Timeframe:* 2001 - present  
*Cost:*  
*Contact:* Dennis Cumbie, Kelly Baty, Glen Rubis: Loudoun County Department of Building and Development, 703-777-0397  
*Website:* <http://www.loudoun.gov/b&d/water.htm#water>  
*Metric/Result:* All of the WRMP activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

#### **1.05 Stream assessments**

*Activity Type:* Data, study or resource  
*Lead Organization:* Loudoun County Building & Development  
*Description:* Component of WRMP (see also 1.04 and 4.11): This future task of the WRMP to include assessment of county streams probably via a rapid stream assessment technique. (Details to be determined.)

*Partners/others:* USEPA  
*Timeframe:* est. 2006 - 2007  
*Cost:*  
*Contact:* Dennis Cumbie, Kelly Baty, Loudoun County Department of Building and Development, 703-777-0397  
*Website:* <http://www.loudoun.gov/b&d/water.htm#water>  
*Metric/Result:* All of the WRMP activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

#### **1.06 Wetlands Mapping and Inventory**

*Activity Type:* Data, study or resource  
*Lead Organization:* Loudoun County Building & Development  
*Description:* Starting in the eastern part of the county, east of the Bull Run Fault, which approximately parallels Highway 15, wetlands are being mapped and delineated where possible. A wetlands layer will be created in the county's Geographic Information System to house new and revised wetlands information. The wetlands will be investigated from the county hydric soil information (see Hydric Soil Map <http://www.loudoun.gov/images/maps/soils.jpg>)

*Partners/others:*  
*Timeframe:* In progress  
*Cost:*  
*Contact:* Alex Blackburn or Kelly Baty, Loudoun County Department of Building and Development, 703-777-0397  
*Website:* <http://www.loudoun.gov/b&d/enviro.htm#wetlands>  
*Metric/Result:*

---

<b>1.07</b>	<b>Catoctin Creek TMDL Implementation Plan - Homeowner Component</b>
<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Loudoun County Health Department/DCR
<i>Description:</i>	Implementation of the residential component of the Catoctin Creek TMDL Implementation Plan is being funded annually with 319 Grant funds from DCR to LCHD to work specifically with homeowners in the Catoctin Creek watershed. Homeowners in this watershed are provided financial and technical assistance for the repair and/or replacement of failing on-site sewage disposal systems or straight pipes. The plan also provides education to homeowners on current on-site sewage disposal system regulations, identification of malfunctioning systems, as well as proper system operation and maintenance.
<i>Partners/others:</i>	DCR
<i>Timeframe:</i>	1 - 2 year timeline
<i>Cost:</i>	
<i>Contact:</i>	James Mackie, LCHD, 703-737-8931, <JMACKIE@loudoun.gov>
<i>Website:</i>	<a href="http://www.co.loudoun.va.us/health/catoctin.htm">http://www.co.loudoun.va.us/health/catoctin.htm</a>
<i>Metric/Result:</i>	
<hr/>	
<b>1.08</b>	<b>Chemical Characteristics and Groundwater Level Data</b>
<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Loudoun County Sanitation Authority
<i>Description:</i>	Chemical Characteristics and Groundwater Level Data available upon request from LCSA. Not currently in published format.
<i>Partners/others:</i>	
<i>Timeframe:</i>	ongoing
<i>Cost:</i>	
<i>Contact:</i>	Todd Danielson, Community Systems Manager, Loudoun County Sanitation Authority (LCSA), 703-771-1095, <todd.danielson@lcsa.org>
<i>Website:</i>	<a href="http://www.lcsa.org/">http://www.lcsa.org/</a>
<i>Metric/Result:</i>	
<hr/>	
<b>1.09</b>	<b>Loudoun Soil and Water Conservation District Agricultural BMPs</b>
<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Loudoun Soil & Water Conservation District
<i>Description:</i>	LSWCD works with landowners to install agricultural best management practices (BMP) to minimize non-point source pollution from agricultural sources in Loudoun County. Technical and financial assistance is available to landowners from the Virginia Agricultural BMP Cost-Share & Tax Credit Program and the USDA-Conservation Reserve Enhancement Program(CREP).
<i>Partners/others:</i>	VDCR, NRCS
<i>Timeframe:</i>	20 years, ongoing
<i>Cost:</i>	
<i>Contact:</i>	LSWCD Staff, Loudoun Soil and Water Conservation District , 703 777-2075 ext. 104
<i>Website:</i>	<a href="http://loudoun.vaswcd.org">http://loudoun.vaswcd.org</a>
<i>Metric/Result:</i>	Measurements for nutrient reduction, soil loss, acres benefited , units installed, and others parameters are available for over 20 years of data for Ag BMP's like fencing, reforestation, livestock water systems and others. Please contact Pat McIlvaine for more info.
<hr/>	
<b>1.10</b>	<b>Catoctin Creek TMDL Implementation Plan - Agricultural Component</b>
<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Loudoun Soil & Water Conservation District/DCR

*Description:* Implementation of the agricultural component of the Catoctin Creek TMDL Implementation Plan is being funded annually with 319 Grant funds from DCR to LSWCD to work specifically with landowners in the Catoctin Creek watershed. Landowners in this watershed are provided financial and technical assistance for the installation of targeted agricultural bmp's, and education programs that encourage landowners to exclude livestock access to Catoctin Creek and it's tributaries.

*Partners/others:* DCR

*Timeframe:* 1.5 years into a 5 year Timeline for the Implementation Plan, with annual grant contract agreements

*Cost:*

*Contact:* LSWCD Staff, Loudoun Soil and Water Conservation District , 703 777-2075 ext. 104

*Website:* <http://loudoun.vaswcd.org>

*Metric/Result:*

---

### **1.11 Loudoun Wildlife Conservancy (LWC) Benthic Stream Monitoring -- Administrative Activities**

*Activity Type:* Data, study or resource

*Lead Organization:* Loudoun Wildlife Conservancy

*Description:* Protocols and Guidelines -- LWC has collaborated with LWW and DEQ to develop protocols to help standardize benthic macro invertebrate and stream habitat monitoring activities in Loudoun County including the following:

- LWC Benthic Macro invertebrate Monitoring Operations Manual - 2005 Update
- LWC Stream Habitat Monitoring Operations Manual -- 2005 Update
- LWC Quality Assurance Program Plan (QAPP) for benthic stream monitoring -- 2005

*Partners/others:* LWA

*Timeframe:* 1997 - Ongoing

*Cost:* 200 person hours

*Contact:* Darrell Schwalm, Loudoun Watershed Watch, <Schwalmie@aol.com>

*Website:* <http://www.loudounwildlife.org/>

*Metric/Result:* Metric- None

---

### **1.12 Loudoun Watershed Watch (LWW) Bacteriological Stream Monitoring -- Administrative Activities**

*Activity Type:* Data, study or resource

*Lead Organization:* Loudoun Watershed Watch

*Description:* Protocols and Guidelines -- LWW has developed in collaboration with LWC, DEQ and County authorities guidelines and protocols to help standardize bacteriological and other stream monitoring activities in Loudoun County including the following:

- Loudoun County Comprehensive Stream Monitoring Strategy -- Plan Design and Guidelines - prepared in 2004
- Catoctin Watershed Project Bacterial Monitoring Manual of Operations -- prepared in 2004

*Partners/others:* LWC

*Timeframe:* 2004 - Ongoing

*Cost:* 300 person hours

*Contact:* Darrell Schwalm, Loudoun Watershed Watch, <Schwalmie@aol.com>

*Website:* <http://www.loudounwatershedwatch.org>

*Metric/Result:* Metric- None

---



### 1.13

#### Loudoun Watershed Watch (LWW) State and Regional Program Coordination

*Activity Type:*  
*Lead Organization:*  
*Description:*

Data, study or resource  
Loudoun Watershed Watch  
*State Programs Coordination* -- LWW provides reviews of state programs and activities that impact on Loudoun watersheds and provides citizen data, technical guidance, and coordination that includes the following:

- Water Quality Integrated Report -- LWW provides citizen stream monitoring data to DEQ on an annual basis for inclusion in the semi-annual report on the water quality status of state streams;
- State Stream Monitoring Sites -- LWW recommends additional stream monitoring sites for follow-up monitoring when citizen data suggests poor stream health conditions; and
- TMDL Assessment -- LWW provides DCR with citizen water quality monitoring data to help assess progress in the implementation of the Catoctin Creek TMDL.

##### *Regional Coordination*

- LWW is one of the founding members of the Virginia Citizens for Water Quality, and works to enhance citizen participation in stream stewardship activities on a statewide basis; and
- LWW participates in regional conferences and workshops to enhance citizen watershed stewardship programs in the Chesapeake Bay watershed.

*Partners/others:*  
*Timeframe:*  
*Cost:*  
*Contact:*  
*Website:*  
*Metric/Result:*

2003 - Ongoing  
50 person hours per year  
Darrell Schwalm, Loudoun Watershed Watch, <Schwalmie@aol.com>  
<http://www.loudounwatershedwatch.org>

---

### 1.14

#### Precipitation monitoring

*Activity Type:*  
*Lead Organization:*  
*Description:*

Data, study or resource  
National Oceanic and Atmospheric Administration/NWS  
Component of WRMP (see also 1.04 and 4.11): Several long-term sites monitoring precipitation on a daily basis. Complete period of record data sets available for purchase through NCDC. USGS monitors rainfall (non-frozen) at two sites (Lovettsville and Plains of Raspberry) with near real-time provisional data on USGS web site.

*Partners/others:*  
*Timeframe:*  
*Cost:*  
*Contact:*  
*Website:*  
*Metric/Result:*

also USGS  
1930 - present  
National Climatic Data Center  
<http://www.ncdc.noaa.gov/oa/ncdc.html>  
All of the WRMP activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

### 1.15

#### Goose Creek Vulnerability Analysis

*Activity Type:*  
*Lead Organization:*  
*Description:*

Data, study or resource  
The Piedmont Environmental Council  
In 2002 & 2003 PEC and the Goose Creek Association in consultation with the Center for Watershed Protection, completed its study of the Goose Creek watershed, covering both Loudoun and Fauquier counties. The project assessed the current and future health of the watershed on a subwatershed basis, with a field-verified, in-depth analysis of three subwatersheds and recommendations to improve or maintain their health.

*Partners/others:*  
*Timeframe:*

GCA, CWP  
January - December 2003

*Cost:* At least \$150,000 including volunteer time, matching funds, and other contributions.  
*Contact:* Gem Bingol, Piedmont Environmental Council, <gbingol@pecva.org>  
*Website:* <http://www.pecva.org/conservation/funds/goosecreekfund.asp>  
*Metric/Result:*

---

### **1.16 Protecting Human Health project—Phase 1 (currently in preparation)**

*Activity Type:* Data, study or resource  
*Lead Organization:* The Piedmont Environmental Council  
*Description:* As a continuation of the work PEC initiated with the Goose Creek Vulnerability Analysis, PEC is now preparing to start a project for the Town of Leesburg's subwatersheds entitled "Protecting Human Health and Water Quality in the Town of Leesburg and its Watersheds." The project is due to begin and complete in calendar year 2006.  
*Partners/others:* Leesburg  
*Timeframe:* January - December 2006  
*Cost:* \$60,000 For phase I of Project.  
*Contact:* Gem Bingol, Piedmont Environmental Council, <gbingol@pecva.org>  
*Website:* <http://www.pecva.org/conservation/funds/goosecreekfund.asp>  
*Metric/Result:*

---

### **1.17 Groundwater level monitoring.**

*Activity Type:* Data, study or resource  
*Lead Organization:* U.S. Geological Survey  
*Description:* Component of WRMP (see also 1.04 and 4.11): Groundwater level monitoring with near real-time provisional data posted to USGS web site. Two wells: one on top of Short Hill in north-west Loudoun and one in eastern Leesburg.  
*Partners/others:* ICPRB  
*Timeframe:* 1963 - present  
*Cost:*  
*Contact:* Mark R. Bennett, U.S. Geological Survey, 804-261-2643, mrbennet@usgs.gov  
*Website:* <http://va.water.usgs.gov/Loudoun/data.htm>  
*Metric/Result:* All of the WRMP activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

### **1.18 Stream stage (water level) & discharge (flow) continuous monitoring.**

*Activity Type:* Data, study or resource  
*Lead Organization:* U.S. Geological Survey/LCB&D  
*Description:* Component of WRMP (see also 1.04 and 4.11): Stream gages at 10 locations in major streams in Loudoun County measure stage and discharge. Two sites with long-term records and 8 new sites added in 2001. Near real-time provisional data posted to USGS web site. Nine sites operated by USGS and one by VADEQ and joint funding from Loudoun County.  
*Partners/others:* LCB&D, USGS, VADEQ, USEPA  
*Timeframe:* 1908-present  
*Cost:*  
*Contact:* Dennis Cumbie, Loudoun County Department of Building and Development, 703-777-0397  
*Website:* <http://www.loudoun.gov/b&d/water.htm#water>  
*Metric/Result:* All of the WRMP activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

## Bacteria TMDL Study - Goose Creek Watershed

<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Virginia Department of Environmental Quality
<i>Description:</i>	Goose Creek Watershed Bacteria TMDL Study
<i>Partners/others:</i>	VDCR
<i>Timeframe:</i>	
<i>Cost:</i>	
<i>Contact:</i>	Bryant Thomas, Virginia Department of Environmental Quality, 703-583-3843, <bhthomas@deq.virginia.gov>
<i>Website:</i>	<a href="http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/goose.pdf">http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/goose.pdf</a>
<i>Metric/Result:</i>	

## Bacteria TMDL Study - Limestone Branch Watershed

<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Virginia Department of Environmental Quality
<i>Description:</i>	Limestone Branch Bacteria TMDL Study
<i>Partners/others:</i>	VDCR
<i>Timeframe:</i>	
<i>Cost:</i>	
<i>Contact:</i>	Bryant Thomas, Virginia Department of Environmental Quality, 703-583-3843, <bhthomas@deq.virginia.gov>
<i>Website:</i>	<a href="http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/lstone.pdf">http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/lstone.pdf</a>
<i>Metric/Result:</i>	

## Bacteria TMDL Study - Piney Run Watershed

<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Virginia Department of Environmental Quality
<i>Description:</i>	Piney Run Bacteria TMDL Study
<i>Partners/others:</i>	VDCR
<i>Timeframe:</i>	
<i>Cost:</i>	
<i>Contact:</i>	Bryant Thomas, Virginia Department of Environmental Quality, 703-583-3843, <bhthomas@deq.virginia.gov>
<i>Website:</i>	<a href="http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/pineyrun.pdf">http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/pineyrun.pdf</a>
<i>Metric/Result:</i>	

## Benthic TMDL Study - Goose Creek and Little River Watershed

<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Virginia Department of Environmental Quality
<i>Description:</i>	Goose Creek and Little River Benthic TMDL Studies
<i>Partners/others:</i>	VDCR
<i>Timeframe:</i>	
<i>Cost:</i>	
<i>Contact:</i>	Bryant Thomas, Virginia Department of Environmental Quality, 703-583-3843, <bhthomas@deq.virginia.gov>
<i>Website:</i>	<a href="http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/catocftc.pdf">http://www.deq.virginia.gov/tmdl/apptmdls/potrvr/catocftc.pdf</a> <a href="http://www.deq.virginia.gov/tmdl/apptmdls/fcadden.pdf">http://www.deq.virginia.gov/tmdl/apptmdls/fcadden.pdf</a>
<i>Metric/Result:</i>	

## Bacteria TMDL Study - Catoctin Creek Watershed

<i>Activity Type:</i>	Data, study or resource
<i>Lead Organization:</i>	Virginia Department of Environmental Quality/VDCR
<i>Description:</i>	Catoctin Creek Watershed Bacteria TMDL Study and Implementation Plan
<i>Partners/others:</i>	VDCR
<i>Timeframe:</i>	August 2004 - August 2009

*Cost:* \$1,718,000 (Approx. \$344,000/year)  
*Contact:* Bryant Thomas, Virginia Department of Environmental Quality, 703-583-3843, <bhthomas@deq.virginia.gov>  
*Website:* <http://www.deq.virginia.gov/tmdl/apptmdls/potrivr/goosebc.pdf>  
*Metric/Result:* At an estimated cost of \$344,000/year for a five year period, the Implementation Plan seeks to address agricultural and residential concerns in the Upper South Fork Catoctin Creek, Lower South Fork Catoctin Creek, North Fork Catoctin Creek, and Catoctin Creek Watersheds. The Implementation Plan seeks to execute 100% implementation by 8/1/09 and achieve 0% exceedances of the fecal coliform geometric mean water quality standard in all watersheds by 8/1/14, facilitating delisting from the 303(d) impaired waters list. There are approximately 269 miles of perennial and intermittent stream in the four subwatersheds in the Catoctin Creek drainage. The length of fencing required on perennial streams in the Catoctin Creek watershed is approximately 32 miles of fence. Additionally, 126 full livestock exclusion systems (83 cattle and 43 equine) need to be implemented to insure full exclusion of livestock from the streams. The total costs also will establish 76 hardened crossings, correct 20 straight pipes, and provide technical assistance for these projects.

---

## 1.24

### Forest Resources

*Activity Type:* Data, study or resource  
*Lead Organization:* Virginia Department of Forestry  
*Description:* The Virginia Department of Forestry provides forest resource evaluation including the following: forest management planning, forest stewardship planning, reforestation of timberland, forest insect and disease monitoring and assistance, monitoring of timber harvest operations  
*Partners/others:*  
*Timeframe:* Continuous  
*Cost:*  
*Contact:* Kelley Wagner, VDOF, 703.777.0457  
*Website:* <http://www.dof.virginia.gov>  
*Metric/Result:*

---

## 1.25

### Loudoun County Basemapping

*Activity Type:* Data, Study, or resource  
*Lead Organization:* Loudoun County Office of Mapping and Geographic Information  
*Description:* The office produces and distributes maps and mapped data sets, assigns addresses, approves all street names. Maps and data about property, floodplains, soils, topography, zoning, streets, addresses and other topics are available. The office maintains a public information counter where anyone can use the GIS and the county's Land Management Information System (LMIS) to find current land information maintained by various county offices. Aerial mapping is performed annually. On-line mapping is available.  
*Partners/others:*  
*Timeframe:* Continuous  
*Cost:* \$1.8m annual Staff: 23.8 FTE  
([http://inetdocs.loudoun.gov/pio/docs/budget\\_/fy2006\\_/fy06adoptedfisc\\_/executivesummar\\_/13ftefulltimeeq/13ftefulltimeeq.pdf](http://inetdocs.loudoun.gov/pio/docs/budget_/fy2006_/fy06adoptedfisc_/executivesummar_/13ftefulltimeeq/13ftefulltimeeq.pdf))  
*Contact:* Office of Mapping and Geographic Information, 1 Harrison St., S.E., 2nd Floor, P.O. Box 7000, Leesburg, VA 20177. Phone: 703-771-5778, Fax: 703-771-5075; <mapping@loudoun.gov>  
*Website:* <http://www.loudoun.gov/omagi/>  
*Metric/Result:*

---

## 1.26

### Fairfax Water

*Activity Type:*

Data, study or resource *(added to inventory 6/27/06)*

*Lead Organization:*

FW

*Description:*

Fairfax Water (FW) – FW conducted a Source Water Assessment on portions of the Occoquan and Potomac watersheds, including a 107 square mile area upstream of the intake defined by the Broad Run and Sugarland Run tributaries to the Potomac River. The purpose of the Assessment was to collect available information on land use activities and potential sources of contamination, including land use, point source discharges, hazardous waste sites, and other types of facilities that may affect the quality of raw water at FW's water supply intakes.

*Partners/others:*

*Timeframe:*

2001-2002

*Cost:*

*Contact:*

Traci Kammer Goldberg, Chief Source Water Planning and Protection, Fairfax Water, 703-289-6306

*Website:*

<http://www.fairfaxwater.org>

*Metric/Result:*

---

## 2. Education, Outreach, or Project

### 2.01

#### Goose Creek Association Educational Workshops

*Activity Type:* Education, outreach or project  
*Lead Organization:* Goose Creek Association  
*Description:* Goose Creek Association organizes educational workshops for landowners on a number of land use issues concerning watershed protection and best management practices. Workshops have been organized for farmers as well as residential landowners.  
*Partners/others:*  
*Timeframe:* Periodic  
*Cost:* \$1,500 per program  
*Contact:* Nancy West, Goose Creek Association, <noblewest@verizon.net>  
*Website:* <http://www.goosecreekassn.org/>  
*Metric/Result:*

---

### 2.02

#### Community Educational Programs

*Activity Type:* Education, outreach or project  
*Lead Organization:* Loudoun County Cooperative Extension  
*Description:* The mission of Loudoun Cooperative Extension is to provide educational information and resources to Loudoun County citizens through an educational process which uses scientific, research-based knowledge, to address relevant issues and needs to help them improve their lives. It serves as the primary source of assistance for agriculture and horticulture production within the County. Loudoun Cooperative Extension is an educational partnership between the U. S. Department of Agriculture, Virginia Tech, Virginia State Universities (Land Grant Universities), and local government. Trained Extension personnel draw upon the knowledge and resources of specialists and research scientists from the universities. The department offers educational programs designed to meet the needs of the Loudoun community in Agriculture, Horticulture, Family & Community Sciences, and 4-H Youth Development. Local program delivery is also enhanced by hundreds of volunteers who receive training by Extension personnel.

##### *Related programming goals:*

- Provide farm management educational assistance, training, BMP's and crop diagnostic services to local landowners.
- Provide educational programming, BMP's and responsive consulting to commercial horticultural businesses.
- Provide environmental education programs and diagnostic services for homeowners. Coordinate the Master Gardener adult environmental education and outreach program.
- Provide character development, leadership and life skills educational programming to youth and adults through a variety of the 4-H program models (including water quality and environmental and natural resource protection).

*Partners/others:*  
*Timeframe:* Continuous  
*Cost:*  
*Contact:* C.Corey Childs, Extension Agent, Virginia Cooperative Extension - Loudoun Unit, 703-777-0373, <cchilds@vt.edu>  
*Website:* <http://www.co.loudoun.va.us/extension/home.htm>  
*Metric/Result:* Virginia Cooperative Extension-Loudoun office will provide BMP and other applicable related information to land owners through individual on site consultations, group meetings, publications and media items as appropriate, and will serve as a liaison to cooperating organizations or agencies for property owners in the watershed area. Information will be included in a minimum of 2 sponsored educational seminars a year.

### 2.03

#### LCSA Water Forum

*Activity Type:*

Education, outreach or project

*Lead Organization:*

Loudoun County Sanitation Authority

*Description:*

On December 12, 2005 more than 50 professionals in Loudoun County, who work in the field of water quality and supply management, came together to discuss the many new water resource management requirements that Loudoun faces in the near future. A second LCSA Water Forum was held on February 13, 2006.

*Partners/others:*

*Timeframe:*

December 2005 - February 2006

*Cost:*

*Contact:*

Todd Danielson, Community Systems Manager, Loudoun County Sanitation Authority (LCSA), 703-771-1095, <todd.danielson@lcsa.org>

*Website:*

<http://www.lcsa.org/WaterForum.cfm>

*Metric/Result:*

---

### 2.04

#### Loudoun County Environmental Indicators Project (LEIP)

*Activity Type:*

Education, outreach or project

*Lead Organization:*

Loudoun County

*Description:*

GWU Loudoun County Environmental Indicators Project (LEIP) effort was spearheaded by Subijoy Dutta, visiting scholar with George Washington University, with support from U.S. EPA and local foundations. A water quality summit was held on May 22, 2002 at the GWU, Loudoun County Campus with the purpose and objective identified as: "To protect and improve the water quality of Loudoun County by providing a level and transparent platform for active interaction among all of the stakeholders in Loudoun watersheds".

*Partners/others:*

EPA, Claude Moore Charitable Foundation

*Timeframe:*

2002 - Ongoing

*Cost:*

*Contact:*

na

*Website:*

<http://www.gwu.edu/~leip/>

<http://www.gwvirginia.gwu.edu/news/02claudemoore.html>

<http://www.gwvirginia.gwu.edu/news/02leipwater.html>

*Metric/Result:*

---

### 2.05

#### Storm drain marking

*Activity Type:*

Education, outreach or project

*Lead Organization:*

Loudoun Soil & Water Conservation District

*Description:*

LSWCD assist localities with storm drain marking projects. Staff will assist with the project logistics and the locality must incur the cost of materials. LSWCD is currently assisting the Town of Leesburg with a storm drain marking project to meet mandates of its NPDES Plan.

*Partners/others:*

*Timeframe:*

2002 - Ongoing

*Cost:*

*Contact:*

LSWCD Staff, Loudoun Soil and Water Conservation District, 703 777-2075 ext. 104

*Website:*

<http://loudoun.vaswcd.org>

*Metric/Result:*

---

For Information on coverage of storm drain stenciling efforts contact the Town of Leesburg, Nathaniel Ogedegbe

---

### 2.06

#### Watershed Education Program

*Activity Type:*

Education, outreach or project

*Lead Organization:*

Loudoun Soil & Water Conservation District

*Description:*

Student Field Trips, Classroom programs, Riparian buffer planting projects, other activities

*Partners/others:*

*Timeframe:* 20 years, ongoing  
*Cost:*  
*Contact:* LSWCD Staff, Loudoun Soil and Water Conservation District , 703 777-2075 ext. 104  
*Website:* <http://loudoun.vaswcd.org>  
*Metric/Result:* LSWCD provides information related to soil & water conservation issues through education programs, newsletters, newspaper articles and radio to all Loudoun County residents/citizens/schools.

---

## **2.07 LWW Community Outreach and Educational Activities - Family Stream Day**

*Activity Type:* Education, outreach or project  
*Lead Organization:* Loudoun Watershed Watch  
*Description:* Annual Loudoun Family Stream Day -- LWW organizes a collaborative annual event with other County agencies and organization called the Loudoun Family Stream Day to coincide with National Stream Monitoring Week in October. The event features a number of educational "stations" sponsored by different organizations that provide interactive educational materials on watershed stewardship themes. The event has been held at different sites around the county and is well attended especially by school children and their families.  
*Partners/others:* LWC, Keep Loudoun Beautiful  
*Timeframe:* 2003 - Ongoing  
*Cost:* 200 person hours per year  
*Contact:* Samantha Villegas, <[samantha.villegas@lcsa.org](mailto:samantha.villegas@lcsa.org)>; or Darrell Schwalm <[schwalmie@aol.com](mailto:schwalmie@aol.com)>  
*Website:* <http://www.loudounwatershedwatch.org/catocotin/>  
*Metric/Result:*

---

## **2.08 LWW Community Outreach and Educational Activities - Website**

*Activity Type:* Education, outreach or project  
*Lead Organization:* Loudoun Watershed Watch  
*Description:* Loudoun Watershed Website -- LWW has created and maintains a website ([www.loudounwatershedwatch.org](http://www.loudounwatershedwatch.org)) that provides a variety of educational materials for the public including:

- Introductory materials on Loudoun watersheds and stream health and stewardship needs;
- Reports on the quality and health of Loudoun County streams;
- Stream monitoring data for the Catocotin Creek;
- Information regarding DEQ programs and activities that impact Loudoun County;
- Information regarding community stewardship and educational events such as Family Stream Day; and
- Fun and educational materials for youth.

*Partners/others:* LWC, PEC  
*Timeframe:* 2003 - Ongoing  
*Cost:* 200 person hours per year  
*Contact:* David Ward, LWC Volunteer <[dward@earthwardconsulting.com](mailto:dward@earthwardconsulting.com)>  
*Website:* <http://www.loudounwatershedwatch.org/catocotin/>  
*Metric/Result:*

---

## **2.09 LWW Educational Materials**

*Activity Type:* Education, outreach or project  
*Lead Organization:* Loudoun Watershed Watch  
*Description:* Educational Materials -- LWW has developed a number of educational reports, brochures, pamphlets, PowerPoint presentations, and other materials regarding the status of water resources in Loudoun County and watershed stewardship needs that are available to the public. These educational materials include:



- The "2002 State of Loudoun Streams Report" which used state and citizen stream monitoring data to assess the water quality and stream health status of the major watersheds in Loudoun County;
- The "2005 State of Loudoun Streams Report" that updated the 2005 report including new information on non-point pollution sources impacting Loudoun Streams based on DEQ's TMDL studies in Loudoun County;
- A "Citizen's Guide to Starting a Local Watershed Group"
- A LWW Bookmark outlining LWW activities and how to participate in stewardship activities'
- A variety of educational materials on water quality and stewardship needs in the Catoctin Creek watershed including:
  - Catoctin Creek Brochure about Catoctin Creek as a community asset.
  - Catoctin Water Quality Report Card
  - Benefits of Clean Water
  - Fecal Bacteria in Stream Water: Public Health Considerations
  - Catoctin Watershed Project T-Shirts with the project logo for Girl Scout, Boy Scout, and other participants to the Catoctin Stream stewardship events.

*Partners/others:*

*Timeframe:* 2003 - Ongoing

*Cost:*

*Contact:* Darrell Schwalm, Loudoun Watershed Watch, <Schwalmie@aol.com>

*Website:* <http://www.loudounwatershedwatch.org>

*Metric/Result:* No specific measurements applicable.

---

## 2.10

### Loudoun Central Reserve

*Activity Type:*

Education, outreach or project

*Lead Organization:*

The Piedmont Environmental Council

*Description:*

Loudoun Central Reserve. PEC has recognized the importance and value of Goose Creek and its reservoirs as a critical drinking water resource. To that end, PEC met and worked with community organizations and county agencies to educate the public and promote protection of the area. PEC also sponsored bus trips to acquaint the public with the area and the rich resource base (both natural and cultural) that it represents. PEC is interested in continuing to work with interested County agencies toward protection of the reservoir watersheds.

*Partners/others:*

*Timeframe:* January - September 2003

*Cost:* \$7,250 one time project

*Contact:* Gem Bingol, Piedmont Environmental Council, <gbingol@pecva.org>

*Website:* <http://www.pecva.org/counties/loudoun/landuse/centralreserve/centralreserve.asp>

*Metric/Result:*

---

## 2.11

### PEC BMPs and Land Conservation General Efforts

*Activity Type:*

Education, outreach or project

*Lead Organization:*

The Piedmont Environmental Council

*Description:*

PEC actively promotes land conservation in Loudoun County, and land conservation is half of the programmatic focus of PEC's region-wide effort. In the Goose Creek Watershed PEC manages the James M. Rowley Goose Creek Land Conservation Fund to promote BMP's and conservation efforts. PEC's land conservation staff works with the committee members to identify opportunities for conservation and promote those potentials with technical and financial support. In 2003, the Rowley Fund sponsored its 2nd Farm Tour for local farm managers to highlight the value of BMPs for protecting water quality, and to show the concurrent benefits to the farmer. PEC is planning another farm tour in the Catoctin watershed to support the Catoctin TMDL.

*Partners/others:*

*Timeframe:* Ongoing

*Cost:* \$100,000 (A conservative, average estimate of annual program costs.)

*Contact:* Gem Bingol, Piedmont Environmental Council, <gbingol@pecva.org>

*Website:* <http://www.pecva.org/counties/loudoun/>  
*Metric/Result:* - Approximately 1040 acres of wetlands in Loudoun County protected by Conservation easement. (PEC data, 2006)  
- Approximately 166 stream miles are protected by conservation easements in Loudoun County. (PEC data, 2006)

---

## 2.12

### PEC Reducing Nutrient Pollution project

*Activity Type:* Education, outreach or project  
*Lead Organization:* The Piedmont Environmental Council  
*Description:* "Reducing Nutrient Pollution from Loudoun County's Urban Centers: A Collaborative Project to Educate Youth, their Families, and Community Leaders in Purcellville, Leesburg and Sterling." This project started in May of 2004 with Park View High School working on a project in Sterling at Claude Moore Park to improve drainage problems through rain garden plantings at the Farm Museum parking lot. Unable to work out a schedule with Leesburg schools to fit the grant timeframe, we completed the last two segments of the project in Purcellville with Loudoun Valley High School by doing riparian plantings along the South Fork of Catoclin Creek in the Purcellville Nature Park. In the last segment of the project, we also teamed up with the Town of Purcellville more directly to provide plantings that could also potentially qualify as wetland mitigation for their proposed new reservoir. This project has been an extremely successful collaboration which is ongoing in Purcellville. This project was funded with \$10,000 from DCR and \$6,000 from the Virginia Environmental Endowment (VEE). The balance of the match was made up of in-kind donations. We have requested additional funding from EPA to continue the work there, and to use our experience to develop a model for working in the field with other teachers and local governments and agencies on community water quality related issues.  
*Partners/others:* Purcellville, Leesburg, and Sterling  
*Timeframe:* October 2003 - December 2005  
*Cost:* \$20,000 (Grant and match for project through December 2005)  
*Contact:* Gem Bingol, Piedmont Environmental Council, <gbingol@pecva.org>  
*Website:* <http://www.pecva.org/counties/loudoun/>  
*Metric/Result:*

---

## 2.13

### Educational Programs

*Activity Type:* Education, outreach or project  
*Lead Organization:* Virginia Department of Forestry  
*Description:* Education regarding riparian areas, forest health, wildland fire suppression and prevention, TreeCity USA using classroom programs, planting, evening lectures, and other events.  
*Partners/others:*  
*Timeframe:* Continuous  
*Cost:*  
*Contact:* Kelley Wagner, VDOF, 703.777.0457  
*Website:* <http://www.dof.virginia.gov>  
*Metric/Result:*

---

## 2.14

### Fairfax Water

*Activity Type:* Education, outreach or project (added to inventory 6/27/06)  
*Lead Organization:* FW  
*Description:* Fairfax Water (FW) – The FW Water Supply Stakeholder Outreach Program makes grants available to qualified organizations that undertake water supply education or watershed protection projects. Grants may be in the form of funds, technical support, or equipment. As an area lying within Fairfax Water's service area and watershed (Potomac or Occoquan), projects or activities from all of Loudoun County are eligible to participate. Grants of up to \$5,000 per year are available.

For more information on the grant cycle, see FW's grant application guidelines and forms.

*Partners/others:*

*Timeframe:*

*Cost:*

*Contact:*

*Website:*

*Metric/Result:*

2000 - ongoing

Annually funded

Traci Kammer Goldberg, Chief Source Water Planning and Protection, Fairfax Water, 703-289-6306

<http://www.fairfaxwater.org>

### 3. Land use planning, Policy, or Program

#### 3.01

#### EPA Tributary Strategies

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

U.S. Environmental Protection Agency

*Description:*

As part of the Chesapeake 2000 Agreement, the Tributary Strategies are river-specific cleanup strategies that detail the "on-the-ground" actions needed to reduce the amount of nutrients and sediment flowing into the Chesapeake Bay. Tributary Strategies are not mandatory or regulatory but rather catalyze voluntary action and coordination, and help decision makers allocate funding at state level. In August 2004 the Tributary Strategies revised point source control levels in the Tributary Strategy Plans and now also have a direct relationship to the nutrient permit regulations presented to and adopted by the State Water Control Board.

The Strategies "provide a framework that will evolve over time to chart the most efficient and effective course to a clean Bay. As they mature, the strategies will detail what funding initiatives are needed, what policies must be implemented and what technologies need to be developed to expedite Bay restoration. As technology improves, new innovations will be incorporated into the existing plans, allowing Bay/ Program partners to find new ways to reduce our collective impact on the Bay."

Loudoun County has participated in the Tributary Strategy Program meetings which began in December 2003. In April 2004, Secretary of Natural Resources, W. Tayloe Murphy brought forward the Tributary Strategies in which Virginia would participate in the Chesapeake Bay Program and work towards reductions in waste loadings to the streams and lakes throughout Virginia. Reports from this effort are posted at [www.naturalresources.virginia.gov](http://www.naturalresources.virginia.gov).

One component of the program is the development of "input decks" for watershed and communities. These are tables of waste loadings listed by specific BMP's ranging from agricultural crop and animal management to urban stormwater ponds. The waste loads include nitrogen, phosphorous and sediments. The term "input" refers to legacy reference to punch card input file of waste loading values to the mass balance model for the Chesapeake Bay.

During the period 2004-2005, stakeholders from Northern Virginia met with DCR to refine the individual contributions in each of the BMP's. This resulted in the 85-page January 2005 "Chesapeake Bay Nutrient and Sediment Reduction Tributary Strategy" report

([http://www.naturalresources.virginia.gov/WaterQuality/FinalizedTribStrats/ts\\_statewide\\_All.pdf](http://www.naturalresources.virginia.gov/WaterQuality/FinalizedTribStrats/ts_statewide_All.pdf)). Subsequently in March 2005, a 129-page report for Shenandoah and Potomac River Basins was published

(<http://www.naturalresources.virginia.gov/WaterQuality/FinalizedTribStrats/shenandoah.pdf>).

*Partners/others:*

LCB&D, LCGS, VDCR, VDEQ, VSWCD

*Timeframe:*

April 2004 - present

*Cost:*

*Contact:*

John Kennedy, Virginia Department of Environmental Quality,  
<[jmkennedy@deq.virginia.gov](mailto:jmkennedy@deq.virginia.gov)>

*Website:*

<http://www.naturalresources.virginia.gov>.

<http://www.deq.state.va.us/bay/>

<http://www.snr.state.va.us/WaterQuality/index.cfm>

<http://www.chesapeakebay.net/tribtools.htm>

<http://www.naturalresources.virginia.gov/WaterQuality/FinalizedTribStrats/shenandoah.pdf> (March 2005 - Chesapeake Bay Nutrient and Sediment Reduction Tributary Strategy for the Shenandoah and Potomac River Basins)

*Metric/Result:*

See Appendixes A and B for Loudoun County Input Tables.

### **3.02                      Fairfax County Watershed Management Plan for Cub Run/Bull Run**

*Activity Type:* Land use planning, policy or program  
*Lead Organization:* Fairfax County DPWES  
*Description:* Fairfax County has initiated a project to develop comprehensive watershed management plans for each of the 30 watersheds in the county. The management plan for Cub-Run and Bull Run, part of which are in Loudoun County, began in 2004 and is expected to go before the Fairfax Board of Supervisors in late 2006. The overall goal of watershed management planning is to protect and restore streams and their related natural resources. This planning process includes developing project goals and objectives with community input, evaluating current stream conditions, anticipating future conditions and needs, evaluating current plans and policies, implementing measures in a cost-effective manner, and continuous monitoring and assessment of the overall success of the plan. Community involvement is a vital component for developing and implementing a successful plan and will be key to galvanizing community support and buy-in for the implementation of the watershed plan.

*Partners/others:*  
*Timeframe:* January 2004 - September 2006  
*Cost:*  
*Contact:* Matt Meyers, Fairfax County DPWES, Stormwater Planning Division, 703-324-5651, matthew.meyers@co.fairfax.va.us  
*Website:* <http://www.fairfaxcounty-watersheds.net/htmls/public/watershed.aspx?indx=18>  
*Metric/Result:*

---

### **3.03                      Preserving Scenic Buffers on Goose Creek**

*Activity Type:* Land use planning, policy or program  
*Lead Organization:* Goose Creek Scenic River Advisory Committee  
*Description:* The Goose Creek Scenic River Advisory Committee works to preserve scenic buffers on Goose Creek through voluntary donations of buffers. The permanent scenic easement typically permits no removal of flora (except for noxious weeds), no disturbance of earth, no new impervious surfaces (pavement, driveways, buildings, etc.). Enhancement of riparian buffers is allowed, with the advice of the forester, for native species only. "Native" Trails are permitted, but only under the supervision of County Parks and Recreation. No vehicles or domestic animals permitted on trails within the 300' buffer.

*Partners/others:*  
*Timeframe:* Ongoing  
*Cost:*  
*Contact:* Helen Casey, Goose Creek Scenic River Advisory Committee, GooseCreek2002@msn.com  
*Website:* <http://www.co.loudoun.va.us/advisory/gcsrab.htm>  
*Metric/Result:* Miles of 300' Scenic Buffer (Goose Creek and Beaver Dam Reservoir) - 25 linear miles estimated in permanent easement, either with the County or with an environmental group (VOF, etc.) as of May 2006.

---

### **3.04                      Water Resources Technical Advisory Committee (WRTAC)**

*Activity Type:* Land use planning, policy or program  
*Lead Organization:* Loudoun County Water Resources Technical Advisory Committee  
*Description:* The Water Resources Technical Advisory Committee was created by the Board of Supervisors in April 2001 to assist and advise the county in the development, implementation, and evaluation of water resources-related programs. The current committee of eleven members was appointed by the Board in November 2004. County departments of B&D, Planning, Health, and General Services, as well as from LCSA and LS&WCD provide staff support to the Committee.

*Partners/others:*  
*Timeframe:* April 2001 - Ongoing

*Cost:*  
*Contact:* Glen Rubis, Loudoun County Department of Building and Development, Engineering Department, 703-777-0397.  
*Website:* <http://www.loudoun.gov/advisory/water.htm>  
*Metric/Result:*

---

### **3.05**

#### **Forest Resources**

*Activity Type:* Land use planning, policy or program  
*Lead Organization:* Loudoun County Building & Development  
*Description:* The county provides forest resource evaluation including the following: tree canopy evaluation and advice; riparian buffer technical support and guidance regarding specie selection, site preparation, establishment, protection and maintenance; tree conservation plan review; forest insect and disease monitoring and counsel; review of developmental impact on forest resources in conjunction with the county's Environmental Review Team (ERT); monitoring of all mountainside timber harvest operations; development of a county-wide forest type map and forest inventory; development of a tree ordinance; determinations regarding all tree save concerns; and training regarding tree conservation in the development process.

*Partners/others:*  
*Timeframe:* Ongoing  
*Cost:*  
*Contact:* Dana Malone, Loudoun County Arborist 703-777-0397.  
*Website:* <http://www.loudoun.gov/b&d/home.htm>  
*Metric/Result:*

---

### **3.06**

#### **Future Environmental Initiatives**

*Activity Type:* Land use planning, policy or program  
*Lead Organization:* Loudoun County Building & Development  
*Description:* Future efforts planned by the Department of Building and Development to monitor and protect the valuable natural resources of Loudoun County include: Stream Assessment to determine the level of impairment to main rivers or streams in the county and the future writing of a Comprehensive Watershed Management Plan to investigate the 15 major watersheds in the county in coordination with the work already being performed by the Environmental and Historic Resources Program and the Water Resource Technical Advisory Committee.

*Partners/others:*  
*Timeframe:* Future  
*Cost:*  
*Contact:* Kelly Baty, Loudoun County Department of Building and Development, 703-777-0397.  
*Website:* <http://www.loudoun.gov/b&d/future.htm>  
*Metric/Result:* Future metrics to be determined.

---

### **3.07**

#### **Loudoun County Erosion and Sediment Control Program**

*Activity Type:* Land use planning, policy or program  
*Lead Organization:* Loudoun County Building & Development  
*Description:* The primary mission of the county's Erosion and Sediment Control Program is to minimize the degradation of properties, stream channels, water and other natural resources by establishing requirements for the control of soil erosion, sediment deposits and stormwater runoff.

*Partners/others:*  
*Timeframe:* Ongoing  
*Cost:* FY 2006 is approx \$1,523, 073 Note: The County's State DCR approved Alternative Inspection Program saves the County over \$750,000 per year in operating costs.  
*Contact:* Stephen Kayser, Loudoun County Building & Development, Erosion & Sediment Control, 703-777-0397  
*Website:* <http://www.loudoun.gov/b&d/home.htm>

*Metric/Result:* The Erosion and Sediment Control Program quantifies the following on a yearly basis: the total number of "Active" permitted projects, total grading permits issued, yearly E/S inspections, total County disturbed acreage and disturbed acreage within individual watersheds, number of violations including Notices to Comply and Stop Work Orders, number of Grading Permit applications and Land Development applications received and number of "Agreement In Lieu of Plans" for Single Family House construction received. In addition, the number of pre-construction meetings, citizen complaints and E/S bond release inspections are recorded. The E/S Program measures the Inspection component of the program by using an "Efficiency Ratio" which compares the total number of active projects to required number of inspections. Example: In year 2005, there were 11, 388 E/S site inspections, 3,188 total acres disturbed, average of 863 active weekly projects, 233 Notice to Comply violations, 12 Stop Work Orders and average weekly efficiency ratio of 90%. It should be noted that the County has a State DCR approved Alternative Inspection Program which allows construction projects to be "ranked" according to a set of environmental parameters. This separates "High" priority projects from "Low" priority projects and alters the required frequency of inspections saving the County over \$750,000 per year in operating costs alone.

### 3.08

#### Soil Survey

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

Loudoun County Building & Development

*Description:*

The Department of Building and Development staff updates and maintains the soil survey for Loudoun County in accordance with national standards to remain valid with the United States Department of Agriculture. This includes field mapping to identify, classify and delineate soils units within the county in agreement of the federally approved legend, updating the National Soil Information System database and developing interpretations based on soil and landscape units. Updates and field verifications are then entered into the county's Geographic Information System and are available to the public through the county's Office of Mapping and Geographic Information. Specific mapping projects, such as Preliminary Soils Reviews, may be requested, for a fee, for parcels of land to better identify problems and make better land-use decisions.

*Partners/others:*

Ongoing

*Timeframe:*

*Cost:*

*Contact:*

Alex Blackburn or Ryan Reed, Loudoun County Department of Building and Development, Engineering Department, 703-777-0397.

*Website:*

<http://www.loudoun.gov/b&d/enviro.htm#soil>

*Metric/Result:*

All of these activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

### 3.09

#### Strategy for Watershed Management Solutions

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

Loudoun County Building & Development

*Description:*

The Loudoun Strategic Watershed Management Solutions (SWMS) was a collaborative initiative, undertaken from January to June 2006, to coordinate existing watershed efforts and define a shared vision for managing Loudoun County's watersheds. A stakeholder group was convened by Loudoun County's Department of Building and Development and facilitated by the University of Virginia's Institute for Environmental Negotiation (IEN). Funding for the project was provided by the National Fish and Wildlife Foundation, U.S. Environmental Protection Agency, and Loudoun County.

The first step in the SWMS initiative was the formation of a broadly representative stakeholder group called the "SWMS Team." Drawing on recommendations from County staff and stakeholders interviewed, over 125 people were invited to participate in the collaborative SWMS Team. Invitees represented interests of federal, state, regional, local government (County and Towns), water supply,

environmental and conservation groups, farming, business, development, and homeowner associations. Of those invited, approximately 68 people participated in the four SWMS Team meetings between February and June 2004, in which decisions were made by consensus.

The SWMS Team developed a detailed set of consensus recommendations for Loudoun County's watershed planning effort that are embodied in the SWMS Declaration of Cooperation (DOC). The Team made several key recommendations through the SWMS effort. First, the SWMS Team recommended that a balanced and broadly representative Steering Committee be established to provide a mechanism for collaborative decision-making that would allow for flexibility and change during the County's watershed planning process. In addition, the Team developed a vision and goals for the watershed planning process, suggested a two-phased approach to develop watershed plans, placed a strong emphasis on education and outreach, and made recommendations regarding potential funding mechanisms and the designation of a Watershed Coordinator as part of the effort. Lastly, SWMS Team members indicated their continuing support for the watershed planning process through signatures and individual commitments specifying how they will contribute or participate in the process, which may be found at the end of the DOC.

*Partners/others:* See SWMS Team Declaration of Cooperation for participating individuals, organizations and agencies.

*Timeframe:* January - June 2006

*Cost:*

*Contact:* Kelly Baty, Loudoun County, Department of Building and Development, 703-771-5390, [wbaty@loudoun.gov](mailto:wbaty@loudoun.gov)

*Website:* <http://www.loudoun.gov/b&d/watershed.htm>

*Metric/Result:* An evaluation survey of the SWMS team participants was distributed. The results of this process evaluation have not been compiled as of the publishing of this inventory. Contact Tanya Denckla <[tanyadc@virginia.edu](mailto:tanyadc@virginia.edu)> at IEN for more information on feedback received from SWMS participants.

### 3.10

#### Watershed Management Planning

*Activity Type:* Land use planning, policy or program

*Lead Organization:* Loudoun County Building & Development

*Description:* After finalizing a strategy for watershed management planning in Loudoun county (the SWMS project), the Comprehensive Watershed Management Plan (CWMP) will begin developing more detailed watershed management plans for the county. This effort will be managed by the Department of Building & Development and funded, in part, by a grant from EPA. The Watershed Planning Stakeholder Steering Committee (an outgrowth of the SWMS project) will help provide guidance in this effort.

*Partners/others:*

*Timeframe:* June 2006 - 2007

*Cost:*

*Contact:* Kelly Baty, Loudoun County Department of Building and Development, 703-777-0397.

*Website:* <http://www.loudoun.gov/b&d/water.htm>

*Metric/Result:* Future metrics to be determined.

### 3.11

#### Loudoun County Environmental Initiatives

*Activity Type:* Land use planning, policy or program

*Lead Organization:* LCB&D, LCPD, LCGSD, LCHD, LCSA,

*Description:* The primary purpose of the Environmental Initiatives undertaken by the various departments in the County is to implement the Green Infrastructure environmental actions as described in Chapter Five of the 2003 County General Plan.

*Partners/others:*

*Timeframe:* Ongoing



*Cost:* 2000 to present- 100's of 1,000's to millions of dollars have been spent over the last seven fiscal years on these and other efforts. .

*Contact:* Bruce McGranahan, Environmental Coordinator, Loudoun County Department of Planning, 703-737-8511.

*Website:* <http://www.loudoun.gov/b&d/water.htm>

*Metric/Result:* Water Resources Monitoring Program, Wetlands Inventory and Mapping Project, Strategic Watershed Management Solutions, Water Forum, Comprehensive Watershed Management Plan, Water Supply Planning, Goose Creek Source Water Protection Plan, Broad Run Water Reclamation Facility, Inter-County Partnerships to collaborate on Water Resources Management issues, etc. Each of these programs, projects, and efforts will have a specific metric to evaluate the effectiveness of each. For example, the WRMP consists of 8 County/USGS and two USGS/ DEQ(of 10 in County total) Stream Real- Time Gages and two County/USGS Rain Real-Time Gages to measure quantitative stream flow and discharge, and rain flow, respectively. Other efforts like Tree Plantings sponsored by the County have not all been counted. There are a few remote probe groundwater wells, and two real-time groundwater wells (operated by the USGS) that are measuring static and dynamic water levels. More of these wells will be installed to help complete the hydraulic flow of water in critical watershed areas. The hydrodynamics of the water cycle in Loudoun County watersheds are a complex process. And considerable effort is underway to measure and assess that process, as the aforementioned description tries to summarize. All of these activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

### 3.12

#### **Loudoun County Stormwater Management Program**

*Activity Type:* Land use planning, policy or program

*Lead Organization:* Loudoun County General Services

*Description:* The purpose of the Stormwater Management Program is to establish and maintain a countywide program to address the design, development, improvement, operation, inspection, maintenance and oversight of the stormwater management system. The program is administered through the Public Works Division of the Department of General Services. As the population of the county grows, certain federal and state criteria concerning the quality and quantity of storm water runoff must be met. The eastern, urbanized area of Loudoun County has been included by the Environmental Protection Agency and the Commonwealth of Virginia in those areas requiring stormwater discharge permits under the National Pollutant Discharge Elimination System (NPDES) Phase II requirements. Control of the quality and quantity of the runoff is essential to the overall health of our people and our natural resources. The Stormwater Management Plan (SWP) is designed to comply with the six minimum control measures outlined in Virginia state regulations. The SMP is available here:  
[http://inetdocs.loudoun.gov/genserv/docs/stormwater\\_/permitsandrepor\\_/index.htm](http://inetdocs.loudoun.gov/genserv/docs/stormwater_/permitsandrepor_/index.htm)

*Partners/others:* VDEQ

*Timeframe:* June 2002 - Ongoing

*Cost:* Annually funded; approximately \$2 million/year

*Contact:* Randall Williford, Loudoun County Department of General Services, 703-771-5666

*Website:* <http://www.loudoun.gov/genserv/stormwater/index.htm>

*Metric/Result:* 41,300 structures, 500 BMP's, 600 miles of pipe, 700 miles of open channel

### 3.13

#### **Linear Stream Valley Parks/Trail**

*Activity Type:* Land use planning, policy or program

*Lead Organization:* Loudoun County Parks and Recreation

*Description:* Loudoun County Department of Parks Recreation and Community Services is developing a series on linear parks/trails along the County's stream and river corridors. It offers a great opportunity to preserve the environmental integrity of stream and river corridor and provide public open space and access. A system of linear parks/trails offer interesting educational and recreational opportunities in promoting awareness of the stream and river ecosystem, wildlife habitat, culture heritage studies and interpretations. Stream and river corridors have regional

importance with respect to protecting water quality; unique plant, bird and animal habitat; and their contributions to scenic views within their corridors.

*Partners/others:*

*Timeframe:*

*Cost:*

*Contact:*

In progress.

Mark Novak, Chief Park Planner, Loudoun County Department of Parks Recreation and Community Services (PRCS) 703-737-8992, <mnovak@loudoun.gov>

*Website:*

In development.

*Metric/Result:*

---

### 3.14

#### Goose Creek Sourcewater Protection Plan

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

Loudoun County Sanitation Authority

*Description:*

LCSA and the City of Fairfax jointly evaluated potential issues and potential protection measures in the Goose Creek watershed. The resulting Goose Creek Source Water Protection Program report includes descriptions of planning and implementation issues, including recommendations for implementation. LCSA and Loudoun County departments are currently considering the recommendations.

*Partners/others:*

*Timeframe:*

Report Published in December 2003

*Cost:*

*Contact:*

Todd Danielson, Community Systems Manager, Loudoun County Sanitation Authority (LCSA), 703-771-1095, <todd.danielson@lcsa.org>

*Website:*

<http://www.lcsa.org/water/path/protecting.cfm?pl1=1&pl2=3>

*Metric/Result:*

---

### 3.15

#### Occoquan Basin Nonpoint Pollution Management Program

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

Northern Virginia Regional Commission

*Description:*

The Occoquan Watershed covers 590 square miles and includes the Occoquan Reservoir, which serves as the boundary between Fairfax and Prince William counties. The reservoir is one of two major water sources for the Fairfax County Water Authority, which supplies water to over 1 million people in Northern Virginia. Loudoun County's southernmost portion resides in the Occoquan basin. The purpose of Northern Virginia Regional Commission's (NVRC) Occoquan Basin Nonpoint Pollution Management Program is to help localities maintain acceptable water quality in the reservoir through control of nonpoint source pollutant loadings. NVRC maintains the Occoquan Basin Computer Model, which during the early 1980s served as the basis for downzoning the Fairfax County portion of the watershed to protect drinking water from pollution caused by urban development. Every five years, NVRC performs an assessment of changes in land uses in the watershed to update the model and to help localities determine whether additional land management efforts need to be undertaken.

*Partners/others:*

local governments

*Timeframe:*

*Cost:*

*Contact:*

Normand Goulet, [ngoulet@novaregion.org](mailto:ngoulet@novaregion.org)

*Website:*

<http://www.novaregion.org/occoquan.htm>

*Metric/Result:*

---

### 3.16

#### Potomac Watershed Roundtable

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

NVSWCD coordinates roundtable.

*Description:*

The Potomac Watershed Roundtable is a regional inter-government citizen forum whose purpose is to promote collaboration and cooperation on environmental concerns, especially water quality issues, among the various local governments and stakeholder interest groups residing within the Virginia side of the middle and lower

Potomac River watershed. Topics on which the Roundtable has shared information and collaborated on responses and solutions have included the Potomac Tributary Strategies, nonpoint source pollution, water quantity and quality, nutrients, and stormwater management. Committees from this roundtable present recommendations to the General Assembly.

*Partners/others:*

many

*Timeframe:*

Fall 2000 - Ongoing

*Cost:*

*Contact:*

The Northern Virginia Soil and Water Conservation District, 703-324-1460

*Website:*

<http://www.potomacroundtable.org/>

*Metric/Result:*

---

### 3.17

#### The Virginia Conservation Lands Needs Assessment

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

Virginia Department of Conservation and Recreation

*Description:*

The Virginia Conservation Lands Needs Assessment (VCLNA) is a flexible, widely applicable tool for integrating and coordinating the needs and strategies of different conservation interests, using GIS to model and map land conservation priorities and actions in Virginia. The VCLNA allows the manipulation of issue-specific data sets that can be weighted and overlaid to reflect the needs and concerns of a variety of conservation partners - issues like: unfragmented natural habitats, natural heritage resources, outdoor recreation, prime agricultural lands, cultural and historic, resources, sustainable forestry, water quality improvement, drinking water protection. The Natural Landscape Assessment (NLA) is one component of the more comprehensive VCLNA. Based on land cover data derived from satellite imagery, the focus is identifying and prioritizing natural lands and the habitat corridors necessary to support and enhance them. This data layer is a fundamental complement to other conservation interests and needs. The Natural Landscape Assessment is not intended, however, to serve as a tool for fine-scale analyses and prioritizations or for identifying small patches of important habitat. The next step needed to make the VCLNA a comprehensive tool is to assemble or create additional geospatial datasets for the varied needs of additional conservation partners. The Chesapeake Bay Program has identified some available datasets and created useful models as part of their Resource Lands Assessment.

*Partners/others:*

VDEQ

*Timeframe:*

*Cost:*

*Contact:*

Joseph T. Weber, GIS Projects Manager/Conservation Biologist, 804-371-2545 ,  
[joseph.weber@dcr.virginia.gov](mailto:joseph.weber@dcr.virginia.gov)

*Website:*

<http://www.state.va.us/dcr/dnh/vclna.htm>

*Metric/Result:*

---

### 3.18

#### Forestry Best Management Practices and Water Quality Laws

*Activity Type:*

Land use planning, policy or program

*Lead Organization:*

Virginia Department of Forestry

*Description:*

The mission of the Virginia Department of Forestry is to protect and develop healthy, sustainable forest resources for Virginians. DOF works toward this goal by working with landowners and loggers to use forestry best management practices to minimize erosion and enforcing water quality laws. Technical and financial assistance is available to landowners through management plans, cost-share programs and riparian area tax credits.

*Partners/others:*

*Timeframe:*

Continuous

*Cost:*

*Contact:*

Kelley Wagner, VDOF, 703.777.0457

*Website:*

<http://www.dof.virginia.gov>

*Metric/Result:*

## 4. Stream Monitoring or Stewardship

### 4.01

#### Audubon Naturalist Society

*Activity Type:*

Stream monitoring or stewardship

*Lead Organization:*

Audubon Naturalist Society

*Description:*

Audubon Naturalist Society (ANS) – ANS is a regional environmental education and stewardship organization that operates the Rust Sanctuary in Leesburg. It has an active stream monitoring program in Maryland and Fairfax County in Virginia using a modified EPA Rapid Bioassessment II methodology. ANS provides training, environmental stewardship education, and program support for the stream monitoring activities of the Loudoun Wildlife Conservancy in Loudoun County.

*Partners/others:*

*Timeframe:*

*Cost:*

*Contact:*

Cliff Fairweather, Audubon Naturalist Society, 703-737-0021,  
cliff@audubonnaturalist.org

*Website:*

<http://www.audubonnaturalist.org/>

*Metric/Result:*

---

### 4.02

#### LSWCD TMDL (Total Maximum Daily Load) Stream Monitoring Program

*Activity Type:*

Stream monitoring or stewardship

*Lead Organization:*

Loudoun Soil & Water Conservation District

*Description:*

LSWCD monitors streams at a variety of sites throughout Loudoun County for physical and nutrient parameters, fecal bacteria, and aquatic insects. Bacteria sampling is conducted by District Staff and analyzed by Fairfax County Health Laboratory. LSWCD uses Hach and Lamotte field test kits for water chemistry testing and the Save Our Streams (SOS) protocol for their aquatic insect monitoring. For details see web site - [www.loudoun.vaswcd.org](http://www.loudoun.vaswcd.org)

*Partners/others:*

*Timeframe:*

2001 - Ongoing

*Cost:*

*Contact:*

LSWCD Staff, Loudoun Soil and Water Conservation District , 703 777-2075 ext. 104

*Website:*

<http://loudoun.vaswcd.org>

*Metric/Result:*

---

### 4.03

#### Loudoun Wildlife Conservancy

*Activity Type:*

Stream monitoring or stewardship

*Lead Organization:*

Loudoun Wildlife Conservancy

*Description:*

Loudoun Wildlife Conservancy (LWC) – LWC is a 501(c)(3) membership organization whose mission is to preserve wildlife habitat. LWC is the largest unaffiliated conservation group in Loudoun County. LWC members and volunteers supply most of the manpower to the organization's citizen stream monitoring program, the Loudoun Stream Quality Project. In 2004 there were 49 LWC volunteers who monitored 26 different sites on 42 occasions. LWC monitors bottom-dwelling aquatic insects (benthic macro invertebrates) and stream habitat using the EPA Rapid Bioassessment II methodology.

*Partners/others:*

*Timeframe:*

*Cost:*

*Contact:*

Phil Daley, Loudoun Wildlife Conservancy, 540-338-6528, <PEDaley@verizon.net>

*Website:*

<http://www.loudounwildlife.org/>

*Metric/Result:*

LWC has been doing Stream quality assessment/monitoring since 1996. Monitoring is done at selected sites by LWC members, trained by ANS and LWC personnel,

primarily using a modified EPA monitoring protocol. Some sites use a modified SOS protocol, but all sites are now sampling upwards of 200 macro-invertebrates per monitoring session. Currently 15 sites are being monitored twice (spring and Fall) a year. In addition to Biological collection, volunteers also measure/access PH, Temperature, turbidity and sedimentation. Macro samples are identified to the Order/Family level for insects and the Class/Order level for non-insects. Monitors also access land use and human impact ¼ mile above and below the monitor site. All data is provided to LWW for inclusion in their State of the Streams report and also provided to Virginia's DEQ. DEQ estimates that 38 miles of streams are being monitored

#### 4.04

#### **Sugarland Run Phase I. Rapid Stream Assessment Technique (RSAT) (~3mi)**

*Activity Type:*  
*Lead Organization:*  
*Description:*

Stream monitoring or stewardship  
Metropolitan Washington Council of Governments  
Sugarland Run Phase RSAT I.  
The Metropolitan Washington Council of Governments (MWCOC), the Loudoun Soil and Water Conservation District (LSWCD), the Natural Resource Conservation Service (NRCS), the Virginia Department of Forestry (VDOF), Virginia Department of Environmental Quality (VDEQ) are partnering efforts to expand Loudoun County's water resources database. Specifically, through the employment of MWCOC's Rapid Stream Assessment Technique (RSAT) Level III, the partnership seeks to comprehensively evaluate existing tributary stream quality conditions at 20 new and strategically located sites. RSAT was developed by John Galli at to allow watershed managers to perform a simple, rapid reconnaissance-level assessment of stream quality conditions.

*Partners/others:*  
*Timeframe:*  
*Cost:*

1997  
\$50,000 Note: most MWCOC grants typically have a 1:1 match or slightly better, and some in-kind from the LSWCD. Since 1997 MWCOC has brought over \$277,000 to the Loudoun County stream surveying efforts. See other RSAT studies listed in this inventory.

*Contact:*

John Galli, Metropolitan Washington Council of Governments, 202-962-3348, <jgalli@mwccog.org>

*Website:*

<http://www.mwccog.org>

*Metric/Result:*

Since 1997 a total of 27 stream miles have been surveyed in Loudoun County using the RSAT system.

#### 4.05

#### **Sugarland Run Phase II. RSAT (11mi)**

*Activity Type:*  
*Lead Organization:*  
*Description:*  
*Partners/others:*

Stream monitoring or stewardship  
Metropolitan Washington Council of Governments  
Sugarland Run Phase RSAT II. See Sugarland Phase I for RSAT description.

*Timeframe:*  
*Cost:*

1999  
\$60,345 Plus matching and in-kind.

*Contact:*

John Galli, Metropolitan Washington Council of Governments, 202-962-3348, <jgalli@mwccog.org>

*Website:*

<http://www.mwccog.org>

*Metric/Result:*

Since 1997 a total of 27 stream miles have been surveyed in Loudoun County using the RSAT system.

#### 4.06

#### **Talbot Farm Tributary Rapid Stream Assessment Technique (RSAT) (1mi)**

*Activity Type:*  
*Lead Organization:*  
*Description:*  
*Partners/others:*

Stream monitoring or stewardship  
Metropolitan Washington Council of Governments  
Talbot Farm Tributary RSAT

*Timeframe:* 1998  
*Cost:* \$5,000 Plus matching and in-kind  
*Contact:* John Galli, Metropolitan Washington Council of Governments, 202-962-3348, <jgalli@mwccog.org>  
*Website:* <http://www.mwccog.org>  
*Metric/Result:* Since 1997 a total of 27 stream miles have been surveyed in Loudoun County using the RSAT system.

---

#### **4.07 Loudoun County Baseline Biological Monitoring Survey, Phase II: Catoctin Creek, Dutchman Creek, Piney Run, Clarks Run and Quarter Branch Tributary Conditions (~ 8mi)**

*Activity Type:* Stream monitoring or stewardship  
*Lead Organization:* Metropolitan Washington Council of Governments  
*Description:* The LSWCD, the Natural Resource Conservation Service (NRCS), the Virginia Department of Forestry (VDOF), VDEQ and COG are continuing their partnering efforts to expand the County's water resources database. One major goal of the partnership is to continue building upon the success of the recently completed COG Loudoun County Baseline Biological Monitoring Survey (2000-2002) Phase I: Broad Run, Goose Creek, Limestone Branch, Catoctin Creek, Dutchman Creek and Piney Run Mainstem Conditions study. Specifically, through the employment of COG's Rapid Stream Assessment Technique (RSAT) Level III, the partnership seeks to comprehensively evaluate existing tributary stream quality conditions at 20 new and strategically located sites located within the Catoctin Creek, Piney Run, Dutchman Creek, Clarks Run and Quarter Branch watersheds (Figure 1). The total stream survey length associated with the proposed RSAT work is approximately 8-10 miles.  
*Partners/others:* LSWCD, NRCS, VDOF, VDEQ  
*Timeframe:* 2004  
*Cost:* 86000  
*Contact:* John Galli, Metropolitan Washington Council of Governments, 202-962-3348, <jgalli@mwccog.org>  
*Website:* <http://www.potomacroundtable.org/>  
*Metric/Result:* ditto

---

#### **4.08 Virginia Department of Environmental Quality**

*Activity Type:* Stream monitoring or stewardship  
*Lead Organization:* Virginia Department of Environmental Quality  
*Description:* Virginia Department of Environmental Quality (DEQ) collects stream quality data at several stations in Loudoun as part of Virginia's ambient water quality monitoring network. The data consist primarily of physical, chemical, and bacteriological measurements. DEQ also collects stream habitat and macro invertebrate data.  
*Partners/others:*  
*Timeframe:* January 2000 - December 2004  
*Cost:* \$16,000/year (approximately)  
*Contact:* Bryant Thomas, Virginia Department of Environmental Quality, 703-583-3843, <bhthomas@deq.virginia.gov>  
*Website:* <http://www.deq.virginia.gov>  
*Metric/Result:* Although stream monitoring in Loudoun has been ongoing since the late 1960s, the costs are derived from the annual average of laboratory analysis fees incurred from stream monitoring in Loudoun County between the calendar years 2000 and 2004. During this time, 163 river miles of stream in Loudoun County were assessed using DEQ provided data, including bacterial monitoring. Staff salaries, field equipment, vehicles, gasoline, and other miscellaneous expenses were not included in this total.

---

#### 4.09

#### Youth and Educator Stewardship and Stream Monitoring Programs.

*Activity Type:* Stream monitoring or stewardship  
*Lead Organization:* Earthforce  
*Description:* Earthforce supported a group of teachers with stream monitoring kits. In October 2005, eight teachers throughout Loudoun County collected raw water samples from waterways. All of the samples were delivered to Fairfax Water's lab. The results from the tests were then provided to Jeff Talbott of the Virginia Department of Environmental Quality, who provided an analysis of the data at a teacher meeting on [http://www.earthforce.org/files/1189\\_file\\_VA\\_DEQ\\_Loudoun\\_Data.pdf](http://www.earthforce.org/files/1189_file_VA_DEQ_Loudoun_Data.pdf). Earthforce also publishes guides and handbooks, such as "The Healthy Streams Handbook".  
*Partners/others:* School teachers  
*Timeframe:* October - December 2005  
*Cost:*  
*Contact:* Jen McDonnell, 703-868-6042, [jmcdonnell@earthforce.org](mailto:jmcdonnell@earthforce.org)  
*Website:* <http://www.earthforce.org/section/offices/capitalregion/>  
[http://www.earthforce.org/files/1189\\_file\\_VA\\_DEQ\\_Loudoun\\_Data.pdf](http://www.earthforce.org/files/1189_file_VA_DEQ_Loudoun_Data.pdf)  
*Metric/Result:*

---

#### 4.10

#### Citizen Stream Monitoring - Goose Creek

*Activity Type:* Stream monitoring or stewardship  
*Lead Organization:* Goose Creek Association  
*Description:* Goose Creek Association conducts stream monitoring and has data for parts of Goose Creek that are in Fauquier county that are separate from the data collected by LWW.  
*Partners/others:*  
*Timeframe:* ongoing  
*Cost:* \$7,500 per year grant  
*Contact:* Nancy West, Goose Creek Association, [<noblewest@verizon.net>](mailto:noblewest@verizon.net)  
*Website:* <http://www.goosecreekassn.org/>  
*Metric/Result:* There are 15-18 monitoring sites primarily in Fauquier County.

For the Goose Creek Watershed, the following measurements were collected for the *Conservation Reserve Enhancement Program (CREP)* provided by the Marshall Soil and Water Districts and DHR. Contact Tom Turner for more information: [tom.turner@va.nacdn.net](mailto:tom.turner@va.nacdn.net)

Linear feet of Riparian Buffer: 46,201 Loudoun; 156,395 Fauquier.

Acres of Riparian land under conservation easement - For the Goose Creek Watershed - there are 72,000 acres under conservation easement in the Goose Creek Watershed, or approximately 30% of total land (PEC statistic). Of this total 72,000 acres, approximately 27,850 acres are in conservation easement in the Goose Creek watershed portions of Loudoun County.

E&S miles of fenced riparian corridors / Other E&S controls - For the Goose Creek Watershed: WP-2/E&S miles of fenced riparian corridor: Loudoun 10.75 miles; Fauquier 10.21 Miles.

Other E&S Control Measures (tree plantings, upland tree planting, crops and grasses planted, etc): Loudoun - 1965.2 acres; Fauquier - 1120.3 acres.

---

<b>4.11</b>	<b>Loudoun County Water Resource Monitoring Program (see also 1.04)</b>
<i>Activity Type:</i>	Stream monitoring or stewardship
<i>Lead Organization:</i>	Loudoun County Building & Development
<i>Description:</i>	The goal of the Water Resource Monitoring Program (WRMP), which began in October 2002, is to coordinate and work with various county departments, federal agencies and local citizens groups to assess and protect Loudoun County's valuable water resources. Since this work is a long-term project and will take significant monetary commitments, funding resources are being sought through a variety of means and organizations. The following projects are a summary of the WRMP. There is also a link to a map showing selected ground and surface water sites being monitored as part of the WRMP.
<i>Partners/others:</i>	USGS
<i>Timeframe:</i>	October 2002 -
<i>Cost:</i>	
<i>Contact:</i>	Dennis Cumbie, Kelly Baty, Glen Rubis: Loudoun County Department of Building and Development, 703-777-0397
<i>Website:</i>	<a href="http://www.loudoun.gov/b&amp;d/water.htm#water">http://www.loudoun.gov/b&amp;d/water.htm#water</a>
<i>Metric/Result:</i>	All of these activities are ongoing and have not been operated long enough to assess appropriate metrics or efficacy of the efforts.

---

<b>4.12</b>	<b>Broad Run Water Quality Monitoring Program</b>
<i>Activity Type:</i>	Stream monitoring or stewardship
<i>Lead Organization:</i>	Loudoun County Sanitation Authority
<i>Description:</i>	LCSA established the Broad Run Water Quality Monitoring Program in 1990 to support the Broad Run Water Reclamation Facility (WRF). This is a long-term comprehensive study of stream hydrology and pollutant transport in Broad Run prior to and after construction of the WRF facility. The monitoring program consists of biweekly or monthly grab sampling at a site on Broad Run just upstream of LCSA's O&M building in Ashburn. Testing is done for suspended sediment, nutrients, dissolved oxygen, coliforms and trace metals. This work is being performed by the Virginia Tech's Occoquan Watershed Monitoring Laboratory located in Manassas, Virginia.
<i>Partners/others:</i>	
<i>Timeframe:</i>	1990 - present
<i>Cost:</i>	
<i>Contact:</i>	Tom Broderick, Broad Run Project Manager, 571-223-3855, ext. 237
<i>Website:</i>	<a href="http://www.lcsa.org/water/path/monitoring.cfm?pl1=1&amp;pl2=2">http://www.lcsa.org/water/path/monitoring.cfm?pl1=1&amp;pl2=2</a>
<i>Metric/Result:</i>	

---

<b>4.13</b>	<b>Loudoun County Sanitation Authority</b>
<i>Activity Type:</i>	Stream monitoring or stewardship
<i>Lead Organization:</i>	Loudoun County Sanitation Authority
<i>Description:</i>	Loudoun County Sanitation Authority (LCSA) – LCSA monitors wastewater and drinking water treatment discharges throughout the county. It does not routinely monitor stream waters, but has conducted a special study on Broad Run for a new wastewater treatment facility. LCSA also conducted a special Source Water Protection Program study of the Goose Creek and Beaverdam Reservoir.
<i>Partners/others:</i>	
<i>Timeframe:</i>	
<i>Cost:</i>	
<i>Contact:</i>	Todd Danielson, Community Systems Manager, Loudoun County Sanitation Authority (LCSA), 703-771-1095, < <a href="mailto:todd.danielson@lcsa.org">todd.danielson@lcsa.org</a> >
<i>Website:</i>	<a href="http://www.lcsa.org/">http://www.lcsa.org/</a>
<i>Metric/Result:</i>	

---

<b>4.14</b>	<b>Loudoun Watershed Watch (LWW)</b>
-------------	--------------------------------------



*Activity Type:* Stream monitoring or stewardship  
*Lead Organization:* Loudoun Watershed Watch  
*Description:* Loudoun Watershed Watch (LWW) was formed in 2000 by citizen and county authorities concerned about protecting the water resources of Loudoun County. LWW recruits citizen volunteers and uses grant funds to collaborate with government officials to organize stream stewardship activities on a countywide basis and to provide materials to educate citizens and county decision makers. Examples of watershed stewardship and educational activities that can be provided by LWW include:

- \* Development of stream monitoring, habitat assessment, stream survey, and QAPP protocols and guidelines;
- \* Stream monitoring and TMDL assessment data collection;
- \* Compilation and analysis of state and citizen stream monitoring data;
- \* Organization of watershed stewardship activities such as riparian buffer restoration;
- \* Development of citizen educational materials; and
- \* Access to stewardship materials and information about events in Loudoun County on a website.

*Partners/others:*  
*Timeframe:* 2002 - ongoing  
*Cost:*  
*Contact:* Darrell Schwalm, Loudoun Watershed Watch, <Schwalmie@aol.com>  
*Website:* <http://www.loudounwatershedwatch.org>  
*Metric/Result:* No metric

---

#### **4.15 Loudoun Watershed Watch (LWW) -- TMDL Related Catoctin Watershed Project**

*Activity Type:* Stream monitoring or stewardship  
*Lead Organization:* Loudoun Watershed Watch  
*Description:* Catoctin Watershed Project (CWP) – In 2004 LWW collaborated with LWC and ANS to establish the Catoctin Watershed Project (CWP) in order to obtain grant funds to initiate several stream stewardship activities in the Catoctin Watershed. Grant funds of approximately \$4,000 in 2004, \$6,000 in 2005, and \$3,000 in 2006 were obtained to support the Virginia Department of Conservation and Recreation (DCR) TMDL Implementation Plan to reduce fecal pollution in the watershed so water quality can meet state standards for recreational use. Examples of activities that CWP grant funds can support include:

- Water quality monitoring to assess TMDL Implementation progress;
- Organization of local Friends of Catoctin Watershed group;
- Organization of stream stewardship events such as riparian buffer restoration projects;
- Support of stream clean-up projects;
- Mentoring and support for students engaged in water related science projects; and
- Conducting stream surveys and stream walks to help identify priority stream protection and restoration needs.

*Partners/others:* ANS  
*Timeframe:* 2005 - ongoing  
*Cost:* 300 person hours per year  
*Contact:* Darrell Schwalm, Loudoun Watershed Watch, <Schwalmie@aol.com>  
*Website:* <http://www.loudounwatershedwatch.org>  
*Metric/Result:* No metric

---

#### **4.16 Loudoun Watershed Watch (LWW) Bacteriological Stream Monitoring Activities**

*Activity Type:* Stream monitoring or stewardship  
*Lead Organization:* Loudoun Watershed Watch  
*Description:*

- Stream Monitoring -- LWW monitors 14 stream sites in the Catoctin Watershed twice monthly for bacteriological quality. This project involves approximately 40 person hours per month.
- Data Records -- LWW maintains and updates a data spreadsheet and data analyses on a bi-monthly basis of the Catoctin Watershed bacteriological data involving approximately 30 records per month and approximately 3 person hours per month.
- Data Provided to Public -- LWW records the Catoctin watershed bacteriological monitoring data online at the LWW website on a bi-monthly basis involving approximately 2 person hours per month.
- Special Studies -- LWW conducts special bacteriological sampling studies two or three times yearly in the Catoctin Watershed involving approximately 60 person hours per year.
- Annual Reports -- LWW compiles and provides a written analysis of the DEQ and LWW bacteriological data for the Catoctin Watershed on a yearly basis to track progress on the TMDL implementation; and reports their findings to DEQ, DCR, the Loudoun Health Department, and the Loudoun Soil and Water Conservation District involving approximately 20 person hours per year.

*Partners/others:*

LWC

*Timeframe:*

June 2004 - Ongoing

*Cost:*

620 volunteer person hours per month

*Contact:*

David Ward, LWC Volunteer <dward@earthwardconsulting.com>

*Website:*

<http://www.loudounwatershedwatch.org>

*Metric/Result:*

Metric -- "Stream miles assessed for nonpoint fecal pollution" (based on 2 miles per sampling site) -- 28 miles

#### 4.17

#### **Rapid Stream Assessment Technique (RSAT) Level III (~7mi)**

*Activity Type:*

Stream monitoring or stewardship

*Lead Organization:*

Metropolitan Washington Council of Governments

*Description:*

The Loudoun County Board of Supervisors, the Loudoun Soil and Water Conservation District (LSWCD), the Natural Resource Conservation Service (NRCS), the Virginia Department of Forestry (VDOF) and Metropolitan Washington Council of Governments (COG) proposed a partnership with the goal to comprehensively evaluate existing stream quality conditions at 20 strategically located sites within the county. The baseline condition data generated by this effort is intended to provide needed guidance for possible future watershed protection, restoration, monitoring and resource management initiatives and actions. The major watersheds for the Phase I study include Broad Run, Goose Creek, Limestone Branch, Dutchman Creek, and Piney Run. The project is in coordination with Loudoun County government, LSWCD, NRCS and VDOF. Coordination will also be maintained with other organizations that are interested or involved in stream protection and monitoring; these include the Friends of Sugarland Run, the Audubon Naturalist Society, Izaak Walton League, Save Our Streams, North Fork Goose Creek Watershed Committee, Piedmont Environmental Council, Goose Creek Scenic River Advisory Board and Goose Creek Association. (Status of project not yet known.)

*Partners/others:*

LC, LSWCD, NRCS, VDOF

*Timeframe:*

2001 - ?

*Cost:*

\$75,695

*Contact:*

John Galli, Metropolitan Washington Council of Governments, 202-962-3348, <jgalli@mwkog.org>

*Website:*

<http://www.mwcog.org>

*Metric/Result:*

General stream quality-channel stability, channel scouring/deposition, physical aquatic habitat, water quality, riparian buffer and biological community health (Macroinvertebrates)

#### 4.18

#### Metropolitan Washington Council of Governments

*Activity Type:*

Stream monitoring or stewardship

*Lead Organization:*

Metropolitan Washington Council of Governments

*Description:*

Metropolitan Washington Council of Governments (COG) – COG is a regional organization that conducts baseline studies of stream quality conditions at the invitation of local officials. In the past 10 years, COG has conducted studies of Sugarland Run, Broad Run, Goose Creek, Limestone Branch, Piney Run, and Dutchman's Creek.

*Partners/others:*

*Timeframe:*

*Cost:*

*Contact:*

John Galli, Metropolitan Washington Council of Governments, 202-962-3348, <jgalli@mwkog.org>

*Website:*

<http://www.novaregion.org/occoquan.htm>

*Metric/Result:*

---

#### 4.19

#### US Geological Survey

*Activity Type:*

Stream monitoring or stewardship

*Lead Organization:*

U.S. Geological Survey

*Description:*

US Geological Survey (USGS)– USGS collects chemical, sediment, and stream flow data at stations in Goose and Catocin Creeks. Seven stations were added in 2002 in other streams.

*Partners/others:*

*Timeframe:*

Ongoing

*Cost:*

*Contact:*

Mark R. Bennett, U.S. Geological Survey, 804-261-2643, mrbennet@usgs.gov

*Website:*

<http://www.usgs.gov>

*Metric/Result:*

---

#### 4.20

#### Potomac River Basin Drinking Water Source Protection Partnership

*Activity Type:*

Stream monitoring or stewardship

*Lead Organization:*

(DWSP Partnership)

*Description:*

The DWSP Partnership is a voluntary organization of drinking water suppliers and government agencies working to protect drinking water sources, thereby safeguarding both public health and the environment. Through work groups and active discussion at partnership meetings, the DWSP Partnership is identifying a strategy for carrying forward source water protection as recommended by source water assessments that were prepared throughout the Potomac basin. Nineteen government agencies and drinking water utilities from throughout the Potomac basin have formally joined the DWSP Partnership.

*Partners/others:*

*Timeframe:*

2004- ongoing

*Cost:*

*Contact:*

Cherie Schultz, ICPRB, 301-984-1908/ext 120

*Website:*

[http://www.potomacriver.org/water\\_quality/safewater.htm](http://www.potomacriver.org/water_quality/safewater.htm)

*Metric/Result:*

---

## Appendix A: Tributary Strategies Input Table for Loudoun County-BMP

The Loudoun County data below was produced for the Strategy for the Shenandoah and Potomac River Basins March 2005 - Chesapeake Bay Nutrient and Sediment Reduction Tributary

<http://www.naturalresources.virginia.gov/WaterQuality/FinalizedTribStrats/shenandoah.pdf>

**Disclaimer:** This may not be the final data submitted, nor complete, and may duplicate other metrics. Contact LC B&D

**Tributary Name:** VA Potomac

**County/City:** Loudoun

**Date:** September 3, 2005

BMP	BMP Code	Land Use	Cost Share	2010 Target BMPs	Progress Reported	Remaining BMPs needed
<b>Forestry BMPs</b>						
Forest Harvesting Practices	FR-4	Forest		691	163	528
<b>Agricultural BMPs</b>						
Animal Waste Mgmt System/Barnyard Runoff Cont.	WP-4, WP-4B	Manure		4	3	1
Conservation Plans	NA	Agricultural^		98,405	5,865	92,540
Cover Crops <sup>1</sup>	SL-8, SL-8B	Cropland*		86	936	0
Continuous No-till	SL-15A	Cropland*		0	0	0
<b>Forested Buffers</b>	FR-3, CRFR-3	Agricultural^		13,664	346	13,319
<b>Grass Buffers</b>	WQ-1, WQ-1W	Cropland*		18	446	0
Grazing Land Protection	SL-6	Pasture		6,732	5,762	970
Non-Urban Stream Restoration (linear feet)	SE-1, WP-2A, WP-2C	Pasture		12,745	0	12,745
Nutrient Management Plan Implementation	NM-1	Cropland & Hay		34,460	13,618	20,842
Off Stream Watering w/Fencing	WP-2,	Pasture		33,656	167	33,489
Off Stream Watering w/out Fencing	SL-6B	Pasture		13,462	10	13,452
<b>Retirement Erodeable Land</b>	SL-1, SL-11	Cropland*		524	11,340	0
<b>Tree Planting</b>	FR-1	Agricultural^		13,659	1,682	11,977
<b>Wetland Restoration</b>	WQ-6B	Agricultural^		5,244	0	5,244
<b>Urban/Suburban BMPs**</b>					<b>Other Progress</b>	
<b>Dry Detention Ponds</b>	NA	Urban/Suburban		0	0	0
<b>Dry Extended Detention Ponds</b>	NA	Urban/Suburban		0	0	0
Erosion Sediment Control (ESC)	NA	Urban/Suburban		9,217	3,419	5,798
<b>Forested Buffers</b>	NA	Urban/Suburban		2,863	0	2,863
Non-Structural Shoreline ESC (linear feet)	NA	Urban/Suburban		599	0	599
Nutrient Management Plan Implementation	NA	Urban/Suburban		30,219	3,945	26,274
Structural Shoreline ESC (linear feet)	NA	Urban/Suburban		60	0	60
<b>Tree Planting</b>	NA	Urban/Suburban		2,863	0	2,863
<b>Urban Filtering Practices</b>	NA	Urban/Suburban		7,475	0	7,475
<b>Urban Infiltration Practices</b>	NA	Urban/Suburban		7,475	0	7,475
Urban Stream Restroration (linear feet)	NA	Urban/Suburban		8,108	0	8,108
<b>Wet Ponds &amp; Wetlands</b>	NA	Urban/Suburban		7,475	0	7,475
<b>Wetland Restoration</b>	NA	Urban/Suburban		1,613	0	1,613
<b>Septic BMPs</b>						
<b>Septic Connections (system)</b>	RB-2	Septic		835	0	835
Septic Pumping (system)	RB-1	Septic		3,205	0	3,205

**BMPs in bold letters are conversion practices (e.g. pasture to forest). Once converted, no additional BMPs can be applied.**

All implementation units are acres unless otherwise noted.

BMPs not in bold letters are non-conversion practices and can have multiple BMPs applied per acre.

\*Acres available for high-till and low-till are combined in this table, providing one figure for total acres of cropland available.

\*\*Acres of Pervious Urban, Impervious Urban, and Mixed Open are combined in this table, providing one figure for total Urban/Suburban.

^ Equals the combination of all agricultural land uses (cropland + hay + pasture).

Cover Crops<sup>1</sup> - Progress Reported is for acres installed in 2003 only.

## Appendix B: Tributary Strategies Input Table for Loudoun County-Stormwater

The Loudoun County data below was produced for the Strategy for the Shenandoah and Potomac River Basins March 2005 - Chesapeake Bay Nutrient and Sediment Reduction Tributary

<http://www.naturalresources.virginia.gov/WaterQuality/FinalizedTribStrats/shenandoah.pdf>

***This may not be the final data submitted, nor complete, and may duplicate other metrics.***

Contact LC General Services-Stormwater.

Tributary Name: VA Potomac

County/City: Loudoun

Date: January 2004

BMP Name (CBP Only)	VA Code (Practice #)	BMP Implementation 1985-2001 (units)	Proposed BMP 2002-2010 (units)
<b>Urban BMPs</b>			
Erosion and Sediment Control	acres	3500	5000
Forest Conservation			
Nutrient Management			
Riparian Forest Buffer			
Riparian Grass Buffers			
Stormwater Management Reported by the Following Categories:			
1. Wet Ponds and Wetlands	acres	10000	5000
2. Dry Detention Ponds and Hydrodynamic Structures	acres	20000	10000
3. Dry Extended Detention Ponds	acres	4000	1000
4. Infiltration Practices	acres		
5. Filtering Practices	acres	10000	10000
6. Roadway Systems	acres		
7. Impervious Surface Reduction /Nonstructural Practices	acres		100
8. Street Sweeping and Catch Basin Inserts	acres		
9. Stream Restoration	linear feet	2000	3000
Septic Connections/Hookups	Communal hook up	225	550
Septic Denitrification	Altern.D.F.	128	700
Septic Pumping	Gallons	4,550,000	4,900,000

## **Appendix C: Acronym Table: Organizations**

ANS	Audubon Naturalist Society
CSRAC	Catoctin Scenic River Advisory Committee
Earthforce	Earthforce
FCDPWES	Fairfax County, Stormwater Planning Division
FWA	Fairfax Water Authority
GCA	Goose Creek Association
GCF	Great Country Farms
GCSRAC	Goose Creek Scenic River Advisory Committee
Greenvest	Greenvest
GWU	George Washington University
HCCA	Heavy Construction Contractors Association
Herdon	Herdon
ICPRB	Interstate Commission on the Potomac River Basin
IEN	Institute for Environmental Negotiation, UVA
LCA	Loudoun County Administration
LCB&D	Loudoun County Building & Development
LCBOS	Loudoun County Board of Supervisors
LCCE	Loudoun County Cooperative Extension
LCDED	Loudoun County Department of Economic Development
LCE&S	Loudoun County Building & Development, Erosion & Sediment Control
LCFB	Loudoun County Farm Bureau
LCGS	Loudoun County General Services
LCHD	Loudoun County Health Department
LCOMGI	Loudoun County Office of Mapping and Geographic Information
LCP&D	Loudoun County Planning Department
LCP&R	Loudoun County Parks and Recreation
LCSA	Loudoun County Sanitation Authority
LCWRTAC	Loudoun County Water Resources Technical Advisory Committee
LEAC	Leesburg - Environmental Advisory Commission
Leesburg	Leesburg
LHA	Loudoun Horse Association
Lovettsville	Lovettsville
LSC	Luck Stone Corporation
LSWCD	Loudoun Soil & Water Conservation District
LVSPD	Loudoun Valley Sheep Producers Association
LWC	Loudoun Wildlife Conservancy
LWW	Loudoun Watershed Watch
Middleburg	Middleburg
MWAA	Metropolitan Washington Airport Authority
MWCOG	Metropolitan Washington Council of Governments
NAIOP	National Organization of Industrial and Office Properties
NFGC	North Fork Goose Creek
NOAA	National Oceanic and Atmospheric Administration
NVBIA	Northern Virginia Building Industry Association
NVRC	Northern Virginia Regional Commission

PEC	The Piedmont Environmental Council
Purcellville	Purcellville
Round Hill	Round Hill
SRP	South Riding Proprietary
TB	Toll Brothers
USCOE	U.S. Army Corps of Engineers
USDOA	U.S. Department of Agriculture, NRCS, FSC, USDA
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VAPC	VA Paving Company
VCU	Virginia Commonwealth University
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDOF	Virginia Department of Forestry
VDOT	Virginia Department of Transportation - NoVa Location and Design
VSSWCD	Virginia State Soil and Water Conservation Districts
WC	Walsh, Colucci
WHGA	William H. Gordon and Associates
WSSI	Wetland Studies and Solutions, Inc.



## Appendix D: Index of Organizations by Activity Type

Lead Organization	1. Data, study or resource	2. Education, outreach or project	3. Land use planning, policy or program	4. Stream monitoring or stewardship
ANS				4.01, 4.15
Earthforce				4.09
FCDPWES			3.02	
GCA	1.15	2.01		4.1
GCSRAC			3.03	
LC		2.04		
LCB&D	1.02, 1.03, 1.04, 1.05, 1.06, 1.18		3.01, 3.05, 3.06, 3.07, 3.08, 3.09, 3.10, 3.11	4.11
LCCE		2.02		
LCGS			3.01, 3.11, 3.12	
LCHD	1.02, 1.07		3.11	
LCOMGI	1.25			
LCP&R			3.13	
LCSA	1.01, 1.08	2.03	3.11, 3.14	4.12, 4.13
LSWCD	1.09, 1.10,	2.05, 2.06	3.01	4.02, 4.07, 4.17
LCWRTAC			3.04	
LWC	1.11, 1.12	2.07, 2.08		4.03, 4.16
LWW	1.11, 1.12, 1.13	2.07, 2.08, 2.09		4.14, 4.15, 4.16
MWCOG				4.04, 4.05, 4.06, 4.07, 4.17, 4.18
NOAA	1.14			
NVRA			3.15	
NVSWCD			3.16	
PEC	1.15, 1.16	2.08, 2.10, 2.11, 2.12		
USEPA	1.02, 1.03, 1.04, 1.05, 1.18	2.04	3.01	
USGS	1.14, 1.17, 1.18			4.11, 4.19
VDCR	1.07, 1.09, 1.10, 1.18, 1.19, 1.20, 1.21, 1.22, 1.23		3.01, 3.17	
VDEQ	1.19, 1.20, 1.21, 1.22, 1.23		3.01, 3.12	4.08
VDOF	1.24	2.13	3.18	4.07, 4.17

## Appendix E: Organizational Directory

*This list of organizations was compiled from the full contact list for the SWMS process. Full contact information was not available for every single organization or person.*

Organization	Address	Phone
Audubon Naturalist Society		301-652-9188
Broadlands Community HOA	21907 Claiborne Parkway, Ashburn, VA, 20148	
Cascades HOA	47620 Saulty Drive, Sterling, VA, 20165-4792	
Catoctin Scenic River Advisory Committee		540-822-5249
Clarke County Planning Department	Berryville, VA,	
Fairfax County, Stormwater Planning Division	12000 Government Center Parkway, Suite 449, Fairfax, VA, 22035	703-324-5651
Fairfax Water Authority	8560 Arlington Boulevard, Fairfax, VA, 22031	703-289-6318
Goose Creek Association	23559 Parsons Rd., Middleburg, VA, 20117	540-687-3357
Goose Creek Scenic River Advisory Committee	46753 Winchester Drive, Sterling, VA, 20164	703-430-3668
Great Country Farms	18780 Foggy Bottom Road, Bluemont, VA,	
Greenvest L.C.	307 E. Market Street, Suite 100, Leesburg, VA, 20176	703-777-6373
Heavy Construction Contractors Association	10756-B Ambassador Drive, Manassas, VA, 20109	703-392-7410
Herndon	PO Box 427, Herndon, VA, 20172-0427	703-435-6800
Hillsboro	36956 Charles Town Pike, Hillsboro, VA, 20132-2782	703-779-8328
Institute for Environmental Negotiation, UVA	104 Emmet Street, Charlottesville, VA, 22903	434-924-1855
Leesburg	Baltimore, MD, 21237	
Leesburg - Environmental Advisory Commission	Woodbridge, VA, 22193	703-777-2420
Loudoun County Administration	1 Harrison St. 3rd Floor, Leesburg, VA, 20177	703-771-5712
Loudoun County Board of Supervisors	P.O. Box 7000, Leesburg, VA, 20177-7000	703-777-0204
Loudoun County Building & Development	PO Box 7000, 1 Harrison St. 3rd Floor, Leesburg, VA, 20177	703-777-0397
Loudoun County Health Department	P.O.Box 7000, 1 Harrison St. 3rd Floor, Leesburg, VA, 20177	703-737-8931
Loudoun County Farm Bureau	18055 Harmony Church Rd, Hamilton, VA, 20158	703-431-9555
Loudoun County Office of Mapping and Geographic Information	1 Harrison St. 2nd Floor, Leesburg, VA, 20177	703.737.8803
Loudoun County Parks and Recreation	PO Box 7000, 1 Harrison St. 3rd Floor, Leesburg, VA, 20177	703-737-8992
Loudoun County Planning Department	PO Box 7000, 1 Harrison St. 3rd Floor, Leesburg, VA, 20177	703-737-8511
Loudoun County Public Schools	21000 Education Court, Ste 210, Ashburn, VA, 20148	571-252-1298
Loudoun County Public Works	211 Gibson, Leesburg, VA, 20175	703-737-8686
Loudoun County Sanitation Authority (LCSA)	PO Box 4000, Leesburg, VA, 20177	703-478-8016
Loudoun Horse Association	Georges Mill Farm, 11605 Millers Ridge La., Lovettsville, VA, 20180	
Loudoun Soil & Water Conservation District	30 H Catoctin Circle SE, Leesburg, VA, 20175	
Loudoun Soil & Water Conservation District (LSWCD)	30 H Catoctin Circle SE, Leesburg, VA, 20175	703-777-2075
Loudoun Valley Sheep Producers Association	Redgate Farm, 17883 Dry Mill road, Leesburg, VA, 20175	
Loudoun Watershed Watch	PO Box 2088, Purcellville, VA, 20134	703-430-4180
Loudoun Wildlife Conservancy	PO Box 2088, Purcellville, VA, 20134	540-338-6528
Lovettsville	PO Box 238, Philomont, VA, 20131	540-822-5788

Organization	Address	Phone
Luck Stone Corporation	751 Miller Drive, Suite C-2 , Leesburg, VA, 20175	703-554-6162
Metropolitan Washington Airport Authority	West Building, Room 155 , Ronald Reagan Washington National Airport, Washington, DC, 20001	703-417-8168
Metropolitan Washington Council of Governments	777 North Capitol Street, Suite 300, Washington, DC, 20002	202-962-3348
Middleburg	PO Box 187, Middleburg, VA, 20118-0187	540-687-5152
National Park Service	410 Severn Avenue, Suite 109, Annapolis, MD, 21403	
Northern Virginia Building Industry Association (NVBIA)	44084 Riverside Parkway , Suite 300 , Leesburg, VA, 20176-5102	703-777-6373
Northern Virginia Regional Commission	3060 Williams Drive, Suite 510 , Fairfax, VA, 22031	703-642-4625
Purcellville	130 East Main Street, Purcellville, VA, 20132-3162	540-338-5024
Round Hill	PO Box 36, Round Hill, VA, 20142-0036	540-338-7878
South Riding Proprietary	43055 Center Street, South Riding, VA 20152, VA, 20152	
The Piedmont Environmental Council (PEC)	802 Children's Center Rd., Leesburg, VA, 20175	540-955-9000
Toll Brothers	21630 Ridgetop Circle, Suite 130, Dulles, VA, 20166	704 327-5497
Town of Leesburg	PO Box 88, Leesburg, VA, 20178-0088	703-771-2775
U.S. Army Corps of Engineers		410-962-5196
U.S. Department of Agriculture, NRCS, FSC, USDA		703-777-2075
U.S. Environmental Protection Agency - Wetland and Waters Program	c/o Otto Gutenson, 13121 Orrison Rd., Lovettesville, VA, 20180	202-566-1183
U.S. Geological Survey - Director of Water Resource	1730 East Parham Rd, Richmond, VA, 23228	804-261-2643
VA Paving Company		703-751-7100
Virginia Cooperative Extension - Loudoun Unit	30-B Catoctin Circle, S.E, Leesburg, VA, 20175	703-777-0373
Virginia Department of Conservation and Recreation (DCR)	98 Alexandria Pike, Suite 33, Warrenton, VA, 20186	540-351-1590
Virginia Department of Environmental Quality (DEQ)	98 Alexandria Pike, Suite 33, Warrenton, VA, 20186	703-583-3803
Virginia Department of Forestry – Stream Resources		703-777-0457
Virginia Department of Transportation - NoVa Location and Design	14685 Avion Parkway, VA , Chantilly, VA, 20151	703-383-2182
Wetland Studies and Solutions, Inc. (WSSI)	5300 Wellington Branch Drive, Suite 100, Gainesville, VA, 20155	703-679-5600